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MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association

VOL. V

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ORIGINAL ARTICLES

SURGICAL TREATMENT OF GOITER

A. SCHWYZER, M.D.
St. Paul, Minn.

Discussion of the surgical treatment of goiter requires a separate consideration of different problems. The simple colloid and cystic goiters, the aberrant goiters (especially the intrathoracic forms), then the toxic forms and finally the malignant growths of the thyroid, each demand separate consideration.

In simple goiters the operative results have become so good that we are allowed to operate for cosmetic reasons alone, if the patient wishes it. A few points as to the technic may be worth while mentioning. First, the collar incision is sufficient for practically all cases. The four most important special features of the operation of thyroidectomy are: first, the hemostasis; second, injury to the recurrent laryngeal nerve; third, the occurrence of severe dyspnea from compression of the trachea; and fourth, the removal of too much glandular tissue.

As to hemostasis: In Switzerland, where the goiter surgery was early developed, a preliminary ligation of at least one inferior thyroid artery is almost universally done. This is due to the enormous size of many colloid goiters, as we very rarely see nowadays in this country. The *arteria thyroidea ima*, which at times is present, comes straight up from the chest accompanied often by large veins. It must always be thought of and looked out for. It may be as large as a lead pencil. In any difficult case the freeing of the upper horn is the greatest help to make us master of the situation. The laying bare of the trachea exposes the patient to the danger of severe bronchitis through the acute changes in the circulation with its consequent congestion. It also endangers somewhat the recurrent laryngeal nerve. This nerve may be paralyzed not only by cutting or removing a segment with the goiter, but the continuous suture may grasp it. The preliminary ligation of the inferior thyroid artery may injure it; or it may be overstretched by pulling

too strongly on the partly freed goiter lobe, or by pulling on the suture of the goiter stump.

When dealing with a very bloody and large goiter it is best for the less dexterous operator to cut between two clamps even after the principal recognizable blood vessels are clamped all around the lobe which is to be removed. A continuous suture (with catgut) of the remaining portion of the gland seems to have become generally preferred.

In a large intrathoracic goiter it is of prime importance to mobilize the accessible part and to free the upper horn as much as possible and to use it as a handle. It may become necessary to tear up with the finger the interior of the intrathoracic lobe, which may be too large for the bony rim of the entrance to the chest. A preliminary ligation of the inferior thyroid, if feasible, would be of great value here, but may be very difficult.

I have seen in a European clinic an intrathoracic goiter nearly the size of a new-born baby's head, in the right side of the chest. A preliminary splitting of the upper part of the sternum was performed. The patient died on the operating table from a wide opening of the pleural cavity.

We have, on repeated occasions, constructed very simple over-pressure apparatuses, which we improvised for such occasions, using ordinary bellows and any kind of an air chamber or rubber bag to equalize the intermittent action of the bellows. A gas-oxygen apparatus can also give this differential pressure which will keep the lungs filled though the pleurae are opened. Both pleural sacs may become injured.

In intrathoracic goiters the third mentioned difficulty, the collapse of the trachea, is not infrequent. The only goiter case of the non-toxic type including the malignant forms that I have lost in 25 years' practice, was due to collapse of the trachea in an enormous colloid goiter. The patient left the table in pretty good condition, but became choked rather suddenly. In the great hurry that was necessary, we introduced a sterilized stomach tube through the mouth into the trachea down to the bifurcation. This restored the respiration, but a severe and profuse bronchoblennorrhoea followed; the intubation had to be repeated afterward and the patient weak-

ened out at the end of six days. Not long ago we had a case of severe choking from collapse of the trachea during the operation. A thread was put into each side of the trachea. The ends were brought out laterally from the flat neck muscles, and with a forceps attached were kept outside the dressings. The result was very satisfactory. In one severely stenosing intrathoracic goiter we had to do a tracheotomy first and inserted a long flexible cannula far down toward the bifurcation. After this the removal of the large goiter lobe could be done with comparative comfort.

As the fourth point to be watched for in operating for goiter we had mentioned the danger of removing too much tissue. If I may illustrate it again by some personal cases, we had, after removal of a large colloid goiter, a mild form of myxedema which showed itself by a gradual slight thickening of the nose in the course of a year, and a gradually coarser appearance of the face with some puffiness. This occurred though we left the whole posterior capsule with quite a respectable portion of the gland. The patient had apparently very little healthy thyroid tissue left. She had only a trace of reduced physical activity, and mentally no definite change could be made out. Thyroid feeding did her a great deal of good. Such an occurrence must be kept in mind when operating for colloid goiter, where in advanced cases the mental and physical torpidity tells you even before operation that the thyroid function is below par. Often the most degenerated portions of the thyroid are in the posterior layers, and then the only tissue left which looks reasonably normal is about the upper horns and maybe the isthmus. The tissue directly underneath the fibrous capsule is the most ready to take up the function in these cases, and therefore as much of this capsule as is well feasible should be preserved.

If the parathyroids are not normally developed, if they are missing on one side, etc., we are in danger of seeing a tetany develop by the complete removal of one side of the gland alone. Some tissue, if only a thin layer, ought therefore always to be left along the posterior capsule. Only in malignant cases are we allowed to remove one lobe completely and in such cases we have removed with the one side of the gland also the isthmus and the lower part of the other lobe without untoward result.

A case of tetany after thyroidectomy which I saw last year with the most typical symptoms, had been

given parathyroid feeding with only very little result. Calcium salts, added to this, had a very good result in less than twenty-four hours. The surgeon had undoubtedly been too radical. There was no trace of a thyroid to be made out.

In exophthalmic and all over-active (toxic) thyroids we are allowed to remove a great deal more of the gland than in a colloid goiter, up to five-sixths or even nine-tenths of the total glandular substance. Small remnants of the gland with the posterior capsule are apparently sufficient in these cases. There is no doubt but what in such extensive resections the effect of the operation is much more prompt and lasting.

If the patient is too toxic, if loss of weight occurred directly up to the time of the proposed surgical procedure, if the pulse is around 120 and shoots higher rapidly at any excitement, or, still worse, if it is irregular in rate and quality, if the restlessness and sleeplessness are outspoken, thyroidectomy is too dangerous at that moment and the ligation of one or both upper thyroid arteries is advisable as a preliminary step. I have had several cures lasting more than twenty years by ligating both superior arteries and one lower. One such case had, however, after twenty-four years of an apparently good cure again very severe Basedow symptoms and died promptly after thyroidectomy. If the basal metabolism is over +30, the toxic condition is marked, if over +50 it makes surgery risky, though the whole clinical picture will let you decide best whether you should wait with surgical intervention or whether ligation may be done of one or more arteries. Practical experience in judging the whole picture is here decisive, but Plummer's work in this field is nevertheless of greatest value and is truly classical.

Strumitis, with and without abscess formation, is a rare but important clinical picture. The septic symptoms may be very marked with high fever. If a central abscess is forming or one in the posterior layers, it is of great importance that the condition be recognized and treated promptly. Then you may be lucky enough (as a member of my family was) to get the inflamed lobe out clean and neat before a central abscess has burrowed perhaps backward with disastrous result. In other cases the infection may be much more mild. You see thyroiditis and strumitis more often in goiter countries than others, and with a word of Kocher, that always remained impressed on my mind, I will go over to a last chapter, the *malignant goiter*.

Kocher exclaimed once, "When will our Swiss physicians come to recognize that the onset of pain and growth in a goiter after middle age even with slight evening rises of the temperature, does not prove thyroiditis, but may just as well mean carcinoma of the thyroid?" The hardness and small nodular appearance with some stinging pain and increase in size of the gland ought to permit the diagnosis. In one patient, a male, 45 years old, we made the diagnosis of struma maligna and excised the thyroid extensively, though not totally, in November, 1913. The tumor was somewhat larger than a man's fist and was situated in the left lobe. All was well then for two years, when he began to notice a renewed swelling. He did, however, not come back until March, 1918, when I again found on the left side a fist-sized tumor and one of the size of a plum low down on the right side. The left tumor was not movable up and downward, and only very little sideways. We operated again, and had to resect the internal jugular vein for its whole length and two inches of the vagus nerve together with the tumor. About ten days after the operation we applied 3,700 milligramme-hours of radium and six months later another 2,500. During the year, 1919, he had radium twice again, which held the growth in check, though it had made its appearance again. The last time he came for radium treatment was in August, 1920. He was then in rather poor general condition.

Another case of an enormous carcinoma of the thyroid, over-reaching the sternum downward for 7 cm., could be only partly excised. This was done in January, 1918. Radium was used in maximal doses. In the first four months after the operation the 72-year-old lady gained from 118 to 176 pounds. Two years after the operation the neck was quite small and, though there was a hard induration around the trachea, the general condition was very acceptable. Six months later the patient died from what appeared to be pulmonary metastases.

It is noteworthy that some forms of carcinoma of the thyroid have a particular tendency to grow even at an early date into the thyroid veins and form there carcinomatous cords and thrombi. They can be felt and recognized at operation and are the cause of early metastases. These metastases appear comparatively frequently in bones at a time when the moderate swelling of the thyroid may not be recognized as a malignant growth and as the primary tumor.

THE TREATMENT OF EMPYEMA*

A. C. BAKER, M.D.

Fergus Falls, Minnesota

The word "empyema" is from the Greek, signifying a collection of pus in a cavity in whatsoever part of the body it may happen to be. It was generally used to mean a collection of suppurative matter in the testes, thorax, or abdomen. This is the sense in which the word was used by Hippocrates and others. In its most common and proper significance today it means pus in the thorax.

HISTORICAL REVIEW

The earliest known references to this condition are those of Hippocrates. His references to etiology, symptomatology, prognosis and treatment contained much that is fundamental to our present day conception. He said that patients affected with empyema following pleurisy recovered if they got clear of it in forty days from the time it ruptured, but if not, it passed into phthisis. He made further observation that if clear and white pus flowed when an empyema was opened either by cautery or an incision, the patient would recover, but if pus were mixed with blood and was stringy and fetid the patient died. His observations and procedures are truly remarkable when one considers that at this time nothing was known of percussion and auscultation and a diagnosis was made entirely from the symptoms and signs of a systemic infection, with the addition of cough and distress when lying on the sound side. An examination for fluid was made by shaking the patient by the shoulder and determining its presence and location by the splash.

Among those who wrote entertainingly and quite intelligently on the subject of empyema are: Euryphon, a contemporary of Hippocrates; Celsus, at the beginning of the Christian era; Leonidas, a Roman physician in the second century; Galen, in the second century; Aetius and Paulus Aegienta, two Greek physicians of the early middle ages; Albucasis, an Arab in the middle ages; and Fabricius, an Italian physician of the seventh century.

Fienus furnished the first article in German on paracentesis of the chest. The relative merits of opening, whether by cautery or bistoury, were considered and it was stated that the most likely location for opening an empyema was between the sec-

*Presented before the Southern Minnesota Medical Association, Mankato, December, 1921.

ond and third ribs from below, bearing in mind the necessity of care in avoiding injury to the diaphragm. The writers through the eighteenth century dealt largely with a repetition of the facts already stated with a citation of numerous cases and quite frequently with the post-mortem findings. While the ancients undoubtedly operated on cases of empyema, from the time of Hippocrates on, the operation was largely confined to those cases which pointed in the chest wall.

Practically no advance was made from the time of Hippocrates up to 1761, when Auenbrugger described the art of percussion of the thorax. His contemporaries did not recognize its merits and several decades elapsed before it was appreciated. In the literature discord prevails during most of the nineteenth century regarding the treatment of empyema. In 1834 Faure reported before the Academy of Medicine in Paris eight cases operated, two of whom got well, and the remaining six much improved. This provoked much discussion as the operative method was then held in much disfavor. Mercury, purging, bleeding, blistering, and hot fomentations, combined with diet, seemed to be the medical treatment of choice. Laennec, in 1818, stated the operation for empyema was rarely successful. Dupuytren treated fifty cases, only four being cured, and when he developed empyema he refused operation, preferring to die by the hand of God, rather than being helped by a surgeon. Practically all cases reported at this time were "empyema necessitas." Syringes, cannulae and aspirating devices were in general disfavor, as it seemed that with their use in acute empyemas the probability of a development of pneumothorax was great and the probability of cure, small.

In 1860, Aupepin described a new technique for performing thoracotomy, making the opening in the skin and that through the muscle at a different level, thus producing a sort of valve-like action and thereby preventing pneumothorax.

In 1881, Homen collected a series of 141 cases, treated by various surgeons by incision and irrigation, 33 per cent of whom died.

In 1860, Walter reported the resection of a piece of rib for drainage in chronic empyema. Billroth, Koenig, and Ewald then began to perform this operation in their clinics. Simon, in 1869, recommended rib resection in order to reduce a chronic empyema. Kuster in 1877 recommends the same procedure, but it is to Estlander

that credit is generally given for the principle of rib resection for the obliteration of chronic empyema cavities. In 1879 he reported six cases, recommending that a sufficient number of ribs be resected to completely unroof the cavity. Various modifications of this procedure were practiced by different operators from this time on.

In 1890, Schede described his operation, which consisted in turning up a flap of skin and muscle larger than the cavity, then resecting the entire chest wall beneath, the flap being allowed to fall against the collapsed lung; he reported ten cases with two deaths. From 1860 to 1890 the whole trend of the surgeon was towards devising methods to bring the chest wall down to the collapsed lung.

In 1892, Delorme enunciated a new principle in the treatment of this condition, namely: that of the obliteration of the cavity with re-expansion of the lung. This method had been foreshadowed by the literature of that time which at various times and places stated that sometimes cavities were reduced by insufflation, and opinions were expressed that the lung itself probably was capable of re-expansion if not prevented by a limiting membrane. In 1892 Delorme dissected off the parietal pleura in a small empyema cavity with cure; and he thus obtained his idea and reported his procedures. Fowler performed the first operation in 1893. To Delorme, then, belongs the credit of having first enunciated the principle, and to Fowler the credit of having first successfully performed the operation for bringing a collapsed lung out to the chest wall. No contraindication was recognized except that for any surgical procedure; proposed modifications have been numerous, among the most important being rib spreading to conserve the chest wall, insufflation to aid expansion, making gridiron incisions in the thickened pleura when it was found impossible to dissect the membrane from the lung; suturing the lung to the parietal pleura if the lung failed to expand after decortication.

Robinson, of the Mayo Clinic, made use of the muscles of the thoracic wall in filling the empyema cavity. Beck obtained good results by the use of his skin-sliding operation after excision of the roof of the cavity, and in 150 cases of chronic empyema reported 80 per cent cures with his bismuth paste.

PROCEDURES IN ACUTE EMPYEMA

In the development of acute empyema it may properly be asked what constitutes pus. It is usu-

ally true that a serous exudate such as we usually find early in these cases gradually becomes a creamy thick substance designated as pus. Beck has laid down an arbitrary rule stating that if 10 c.c. of this fluid is withdrawn it will be noted that the amount of sediment and purulent matter settling at the bottom will be greater each day. If the fluid withdrawn contains more than 20 per cent of sediment after standing for twenty-four hours it should be considered true pus.

Physiological Considerations.—The presence of an intrapleural pressure less than atmospheric and the reason thereof is a physiological fact well known to all. The collapse of a lung due to equalization pressure within and without, if the chest is open, is another well known fact.

Other factors which deserve first consideration in every clinical application in the surgery of the chest, are:

1. The relationship between the opening in the chest wall and the size of the glottis. Graham and Bell demonstrated the great importance of this in the treatment of acute empyema, showing that the pleural cavities react as one, due to the mobility of the mediastinum, and that when the pressure was large on one side it was correspondingly large on the other. Knowing these facts we should be able to treat a case of bilateral empyema as intelligently as we treat a unilateral case.

2. The mobility of the mediastinum.

3. The presence or absence of adhesions.

4. The vital capacity of the patient. Graham showed that the absolute size of the opening in the chest, in comparison with the glottis, depended on the vital capacity of the patient at that time.

These factors, which are subject to great variance in different individuals, may easily account for the different opinions and conclusions of various clinicians and experimenters in the treatment of acute empyema.

In the treatment of acute empyema we must try to be sure that there is not an existing acute lung involvement. During the influenza epidemic these cases developed so rapidly that the severity of the symptoms seemed to be due entirely to an acute empyema, when many times an acute localized pneumonia existed. We must make sure of this point, for undoubtedly many deaths may be accounted for by the fact that many an operation for an acute empyema is really an operation upon an

acute pneumonia. From our own experience and knowledge gleaned from the available literature, it has been concluded that, except for a tuberculous infection, there seems to be no clear relationship between the type of infection and the severity of progress of either an acute or a chronic empyema.

In acute empyema we have found it best to start by aspirating. This does two things: (1) diminishes pressure; (2) diminishes the amount of absorption. If progress is favorable we may aspirate daily for five to ten days. With this treatment there is no question but that a few cases entirely clear up. If progress is not satisfactory we insert a tube through a hollow cannula between the ribs at the most dependent portion, employing suction to remove shreds and clots if necessary, keeping the tube clamped between emptying intervals, using great care to prevent pneumothorax, which prolongs every case and in a certain percentage of cases is the entire cause of the chronic condition. To flush or not to flush is a mooted question. To us it has seemed that we obtained our best results by not flushing or, at most, only sufficiently to remove whatever plugged the tube. We have secured quite a number of cures in pursuing this method alone. If, in a reasonable time, progress is not made, usually as a result of inadequate drainage, we make a rib resection at the most dependent portion; however, by this time, adhesions have usually taken place and we do not fear an acute pneumothorax. During the drainage period we supplement this with the use of Wolff's bottles and in the case of children with the inflation of toy balloons.

CHRONIC EMPYEMA

In chronic empyema a large opening may be made into the pleural cavity without respiratory embarrassment as the pleural cavities on either side function independently, because of the fixation of the mediastinum and pulmonary adhesions. In the treatment of chronic empyema we must have a clear conception of the cause and pathology. Chronic cavities and persistent fistulas are usually different phases of the same condition; the most common cause of the latter are chronic cavities, osteomyelitis of the rib, broncho-cutaneous fistulas, fibrosis of the sinus wall, foreign bodies and tuberculosis; most causes of chronic cavities are pneumothorax, inadequate drainage, foreign bodies, reinfection and tuberculosis. While empyema has been recognized for twenty-six hundred years, it

was only sixty years ago that the first rib resection was performed; the first thirty years of this period show the development of the idea and the perfection of technique as developed by Schede in bringing the chest down to the contracted lung; the last thirty years has tended more and more to conservatism as first illustrated by the ideas proposed and executed by Delorme and Fowler in bringing the lung out to the chest wall.

Lung expansion has been variously explained. Roser held it was brought about by means of adhesions whose progressive growth along the cavity margin pulled the lung out. Wussgarber held that during expiration intratracheal pressure is increased resulting in lung expansion. That there is truth in both assertions is attested by the various devices used to facilitate the former and the clinical evidence of the value of the latter. Snyder*, of Rochester, has described a procedure which combines the principles of the two: a suction apparatus tends to hold out the lung so that adhesions may form; in addition to this, blowing into Wolff's bottles increases intratracheal pressure and with it lung expansion. As has been before stated, the guiding principles of the last thirty years have been towards conservatism and these principles must be adhered to since persistent fistulas and chronic cavities are not necessarily inconsistent with long life and a fair degree of efficiency. In caring for these chronic cases we must be guided by the pathology present. This must first be determined as accurately as possible, making use of all the diagnostic aids at our command.

Foreign bodies and osteomyelitis of the ribs having been ruled out, most cases persist because of inadequate drainage. We should endeavor to ascertain the size and extent of the cavity; then adequate drainage, which usually means drainage at the most dependent point, must be obtained. Having accomplished this, most cavities persist because of a pneumothorax or the existing infection which may be secondary, or a combination of the two. These cavities should then be irrigated with Dakin's hypochlorite solution every two hours, measurement being made from time to time. This accomplishes several things:

1. The cavity is gradually but surely sterilized, thus relieving the system of toxins, and the general condition of the patient is greatly improved.
2. The thickened membrane covering the lung

is softened, often sufficient to permit lung expansion.

3. The size of the cavity is reduced so that in case a cure is not effected a plastic operation of much less degree may accomplish the result.

4. It promotes the growth of healthy granulations which facilitates formation of adhesions between the lung and chest wall.

5. The sterilization of the cavity greatly reduces the risk attending any operation.

6. Irrigation with Dakin's hypochlorite solution is contraindicated in cavities with bronchial fistulas; here, irrigation with normal salt solution should be used.

Cavities with bronchial fistulas will not close until the fistulas are closed. Frequently a fistula will close as the result of the irrigation treatment. Beck reports the closure of many cases of bronchial fistulas by treating the cavity with bismuth paste. In case this is not successful, eventually some plastic operation must be done and at that time the fistula generally may be closed with cautery.

The surgical treatment of tuberculous empyema is notoriously unsatisfactory; unless the accumulation is so great that pressure symptoms must be considered or it has seemed to us that the condition had better be left alone, as secondary infection may occur either from within or without. Kalb¹ recommends that where they must be dealt with that they should be aspirated and all the fluid in the cavity withdrawn. Then, Murphy's method of infecting from two to twelve ounces of two per cent formaldehyde in glycerine should be used, injecting an amount equal to half the amount withdrawn. Air is then introduced until the manometer reading is near the negative point, or, if it is a case of artificial pneumothorax, the pressure is raised to that usually given this patient. In from two to seven days the patient is again aspirated and again injected with the formaldehyde solution. This is continued every three to ten days until the character of the fluid becomes sero-sanguinous, when it is sterile, and harmless. A tuberculous empyema already opened should be treated according to the rules already established with the addition of the usual systemic treatment for any one affected with tuberculosis.

CONCLUSIONS

1. Acute empyema is best treated: (1) by aspiration; (2) by catheter drainage, being careful to prevent pneumothorax; (3) by rib resection. By

*Snyder, John: A suction apparatus for the treatment of empyema. *Surg., Gyn. & Obs.*, Nov., 1921.

¹Kalb, G. B.: Tuberculous Empyema. *Am. Rev. Tuberculosis*, June, 1921.

the time this is requisite, adhesions have usually minimized the dangers of an acute pneumothorax.

2. After a period of approximately three months, if a cure is not effected, the case should properly be considered chronic and should be treated accordingly. Certain types are chronic from the beginning in the sense that they do not heal with simply adequate drainage; here the irrigation with Dakin's hypochlorite solution is the treatment of choice for the reasons previously enumerated.

3. For the cavity which does not now become obliterated, a pulmonary decortication through the rib-spreading exposure after a preliminary irrigation treatment is the most conservative procedure.

4. If we were then successful a plastic operation is indicated.

5. Tuberculous empyema, not secondarily infected, should not be drained and should be aspirated only for a considerable accumulation of fluid. A large cavity may persist in these cases for years without any effort at lung expansion. It has been found that the pleura is not much thickened, and here probably a fibrosis of the lung has occurred which may also occur in old pyogenic empyema where the lung has lost its power of expansion.

6. The closure of bronchial fistulas is a requisite to healing.

7. Bronchial fistulas are the only contraindications to irrigation with Dakin's hypochlorite solution; here a normal salt solution shall be used until such a time as the closure of the fistula has been secured.

8. Most sinuses close eventually after the obliteration of chronic cavities. Those that do not, require treatment by some plastic operation.

9. Preliminary sterilization reduces infection, amount of shock, extent of operation and consequently the mortality and in very many cases removes the necessity of any operation whatsoever.

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DISCUSSION

DR. CARL A. HEDBLUM, Rochester: We are to be congratulated on having had the opportunity to hear such an instructive paper on the subject of the treatment of empyema. The historical review brought out the striking paradox that although empyema has been operated on since the time of the ancients, it is only within the last sixty years that the first step was taken toward placing the surgical treatment on a rational basis. It was in 1860 that Walter, an American, first resected a normal rib for drainage of empyema.

Doctor Baker very properly raised the question of what constitutes a purulent pleural effusion. Given a turbid or seropurulent fluid, it may be very difficult to decide whether or not the case is to be considered one of empyema. The guiding principle should be, first the condition of the patient and second the microscopic and cultural findings in the fluid. If the patient presents the general picture of an acute infection, the case may often be considered at least as potentially one of empyema; while if the clinical picture is not that of an acute infection the case may be properly considered for the time being as not one of purulent pleurisy. For purposes of treatment it is also very important to bear in mind the possibility of tuberculous empyema. Any case of empyema which has its beginning as pleurisy with serous effusion, the fluid gradually becoming purulent is probably tuberculous and, unless the clinical picture is definitely that of sepsis, should never be drained except in cases where the culture shows a pyogenic infection.

In the treatment of chronic empyema the guiding principle should be conservatism. The patient's life is usually not at stake and for this reason an immediate radical operation is not necessary. Securing adequate drainage is the first consideration and doing away with the slow toxic absorption by irritation of the cavity is also important. Often a large cavity may be entirely obliterated by irrigation with Dakin's solution. The patient often shows a most remarkable improvement under this method of treatment.

If the cavity is only partly obliterated and is still of considerable size, pulmonary decortication may be resorted to. If the cavity is small a plastic operation should be performed. If the cavity is large and decortication fails, then a radical operation is indicated. I believe that decor-

tication should not be attempted for obliteration of a tuberculous empyema cavity.

One word on the use of Dakin's solution. Care should be taken that the solution contains the proper amount of chlorine. If it does not, it is not Dakin's solution. Caution should be exercised in the use of so-called Dakin's solution or any proprietary hypochlorite solution to make sure that it has the proper chlorine strength.

Dr. A. W. IDE, St. Paul: I was sorry Dr. Baker did not have time to complete his paper. I was interested in it, and he has brought out everything up to date.

The diagnosis of empyema is not always easy to make. I recall a case that came under my observation not long ago which shows that these cases may develop rather slowly and the quantity of fluid may be small in amount at first, but one can hardly see any good reason for missing the diagnosis of empyema with the physical findings, the x-ray, and exploratory puncture.

I was taught early in my career the value of the needle by Dr. George Dock who resorted to this method in making the diagnosis. The improvement in the treatment of empyema has been very remarkable in comparatively few years. Looking back fifteen years we can all remember cases that had had mutilating operations done. These operations with our present knowledge seem entirely unnecessary and unwarranted.

The doctor brought out quite hurriedly the question of the Dakin treatment in chronic cases which undoubtedly releases the lung and increases the expansion of the lung to a great extent.

The question of anesthesia is important. Unquestionably a great amount of this work can be done under local anesthesia. Intratracheal anesthesia is also helpful, but for ordinary purposes local anesthesia is all that is necessary.

Graham has made a great contribution to our knowledge in this matter. In his recent article he calls attention to the physiology of the chest and to the fact that septum between the two lungs (mediastinum) is not rigid. This is particularly so in the acute cases.

Dr. E. Z. WANOUS, Minneapolis: I would like to call attention to the treatment of remote focal infections in the management of these cases. I recall a case that came under my observation sometime ago that had a large effusion. The patient was examined very carefully, and we found the source of infection in two infected teeth. The case cleared up entirely after the removal of these teeth. I call attention to this because so many times we look for the source of infection in the pleural cavity itself when it may be found elsewhere.

Dr. HARRY P. RITCHIE, St. Paul: I was interested to note that Dr. Baker said the ancients recommended that these cavities, when drainage was necessary, be made between the second and third ribs below. The principle of dependent and constant drainage is a fundamental one in the treatment of these cases. It should be instituted as soon as it is safe to do so and all other procedures are entirely subsidiary to this method.

Dr. A. C. BAKER, Fergus Falls (closing): This subject is important to all of us because the average practitioner comes up against them frequently, and I want to leave this idea with you, that every case of empyema should be treated

first by aspiration. Many cases are cured that way alone. If this does not cure, catheter drainage should be used and a large percentage cured that way. If you must resect a rib or ribs, try to avoid breaking up adhesions so that an acute pneumothorax will not occur.

I am sorry the treatment of tubercular empyema could not be gone into more thoroughly and at greater length. Cabot, in the *Annals of Tuberculosis*, recommends when the fluid is so great that pressure interferes with other organs or secondary infection takes place that the fluid should be aspirated and, in a way, partially follows Murphy's technic, of injecting a solution of one-half per cent formalin in glycerin, injecting an amount equal to half the amount which was withdrawn, repeating this process in from three to ten days, injecting half as much as you withdraw. He states that after two or three repetitions of this procedure you will render the fluid absolutely sterile, and when it becomes sterile it may be left alone.

Too much emphasis cannot be placed on what Dr. Hedblom has brought out in the treatment of empyema cavities with the Carrel-Dakin solution. The condition has been reduced from a very serious one to a relatively simple one which can be handled by most anybody. We are not justified in doing radical things to reduce convalescence when we can by simple procedures carry these patients along, when many of them live their natural lifetimes and carry their empyema with them. Many of them can be cured by the simple procedure of adequate irrigation, and if you do not cure them you reduce them to a condition which can be operated on easily. Most of these cases can be operated on under local anesthesia.

THYROID THERAPY*

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The x-ray treatment of hyperthyroidism is one of the newer contributions of medicine. The reviews concerning the technique and dosage and the extent and duration of results have in most cases not been complete. We should like to report 35 cases from our private and dispensary clientele observed from January, 1920, to the present time and on whom roentgen treatment was completed before February, 1921.

As concerning the older literature, we will review it briefly: We wish to mention in the German literature, Stegmann, 1905, Eiselberg, 1909, Rave, 1911, and Nagelschmidt, 1912; from the Scandinavian literature, Forsell, 1914, Fischer, 1916, and recently, Nordentoft, 1921; in this country the earlier reports of Williams, 1902, Mayo, 1904, Beck, 1905, and Pfahler and Zulick, 1910. The last article in the American literature is by Means and Aub, 1919,

*Presented before the Southern Minnesota Medical Association, Mankato, December, 1921.

whose excellent work reopened the x-ray treatment of the disease in this country.

The material includes cases of hyperthyroidism which came under the observation of the medical service at the University Hospital, dispensary and private practice during a period of approximately twenty months. No attempt of selection of cases has been made, beyond excluding a few cases in which we could not obtain the necessary co-operation from the referring physicians. The series does not include cases admitted to the surgical service, some of which were more toxic and in which surgical treatment was immediately resorted to. For better interpretation of data the cases have been divided into three groups.

The first group consists of cases of toxic goiter with and without exophthalmos varying from mild to severe.

The second group consists of six post-operative cases of exophthalmic goiter and is included because it represents those cases in which medical treatment is instituted only because surgical treatment has already eliminated itself.

The third group included three cases of thyrotoxic adenoma which received x-ray treatment and are reported for whatever value they may have. No attempt has been made to increase the number of this type of case.

The individuals in these series for the most part led their usual lives and no other coincident treatment was carried on. A few of the cases were under hospital treatment for a few weeks but they form a relatively small part of the series. Most of the observations have been made at the office and the dispensary. Estimation of the activity of the thyroid gland has been based on the metabolic rate, clinical signs and symptoms, such as pulse rate, character of the gland, eye signs, tremor and nervousness. Such data has been incomplete in some of the cases, but in all instances has been sufficient to enable conclusions to be drawn as to the results of treatment. The determination of the metabolic rate has been attempted in each case once every three weeks corresponding numerically to the x-ray treatments, and, in order to avoid an immediate increase that might follow during the first few days, usually eight to ten days following exposure. In some patients fewer determinations were possible, but in all cases the last metabolic rate has been recorded and checked from three to six weeks after the last treatment. The gasometer method of determining the metabolic rate has been employed.

Tissot's spirometer has been used for the collection of the air, and for its analysis the Haldane apparatus. Care has been taken to have the patient in the post-absorptive stage, that is twelve to fourteen hours after food intake, with sufficient period of rest before each determination.

TECHNIC

These cases were all treated with a standard dosage at three-week intervals. The radiation consisted of 30 milliamperere-minutes of ray filtered through 4 mm. of aluminum and one thickness of sole leather. The target-skin distance was 8 inches and the voltage was equal to an 8-inch spark-gap measured between blunt points. Three portals of entry were used, one over each lobe of the thyroid and one over the thymus. If there was not marked improvement noted at the completion of the fourth treatment the dosage was increased to 34 milliamperere-minutes, the other factors remaining constant. It is worthy of note that in several of the cases where improvement has been tardy, a rapid improvement, both in metabolic rate and in the general well-being of the patient was coincident with increased dosage. This is of interest in that most of the European roentgenologists have insisted on large doses at long intervals. While it has been difficult to interpret their induction coil and gas tube technic in terms of interrupterless transformer and the Collidge tube, the constant reiteration through their articles that small doses stimulate and large doses inhibit thyroid activity, is worthy of note. We furthermore believe that there is much less risk of a cumulative skin reaction developing if treatments are given not oftener than once in three weeks.

It must be emphasized that the closest co-operation possible between the referring physician and the roentgen therapist is necessary. A clear understanding is essential as to which assumes the responsibility for the clinical observation and the metabolic readings upon the patient. Otherwise intercurrent infections may be overlooked or over-treatment may result.

DISCUSSION

Group 1 consists of cases of toxic goiter including all degrees of activity, the average case being one of moderate severity as evidenced by a mean metabolic rate of plus 33 per cent. Clinically the same estimation is possibly evidenced by the fact that most of the group were ambulatory patients. We have not attempted to gauge clinical improvement between various treatments. However, a summa-

tion of clinical results is possible following the series of treatments, both as to the patients' condition subjectively and objectively. The pulse rate has been diminished, tremor and nervous symptoms, including insomnia, have been less marked. As would be expected there has been no marked alteration in the eye signs and character of the gland, except in Case 10 in which a markedly enlarged and indurated gland disappeared as if by magic with correspondingly subjective improvement. Fall in heat production followed two exposures to x-ray and the indurated character of the gland and the subsequent course suggest an acute thyroiditis.

Two cases received no appreciable benefit as indicated by lack of clinical improvement and heat production. One of these, Case 17, was a boy of 14, with a diffusely enlarged vascular gland and marked exophthalmos. Operation was later resorted to with subsequent clinical improvement and fall in metabolic rate to minus 17 per cent. Four months later the basal metabolism had again returned to plus 4 per cent. Case 18, a woman of twenty-six years of age, with diffusely enlarged vascular gland but no exophthalmos showed very little response after three treatments and was later operated. For accuracy, it should be stated that Case 2 responded to x-ray therapy only after the removal of badly infected tonsils, which undoubtedly had some etiological relationship to her hyperthyroidism.

Recently we have had an interesting (incomplete) case. A girl with symptoms of hyperthyroidism without exophthalmos, showed an increased basal rate of plus 65 per cent. This type of case has generally been given to the surgical service, but it was agreed because of the severity of the nervous manifestation to try rest in bed and x-ray therapy first. Two weeks after her first x-ray treatment her rate had fallen to plus 25 per cent and the pulse had decreased. Three weeks following her second treatment the basal metabolic rate had dropped to plus 18 per cent. This case received from the first 34 milliampere-minutes of radiation. This case has not been completed and is discussed to show the results of more intensive therapy.

Group 2 consists of six cases which had partial thyroidectomy but in whom hyperthyroidism was present. In Case 3 of this group the improvement has been sufficient to enable the patient to resume work. In the other five cases the improvement has not been as marked as the decrease in metabolic rate from plus 27 per cent to 13 per cent after

therapy would indicate. The subjective symptoms have showed little or no improvement.

Group 3 measured both clinically and my basal metabolic rate shows no response to x-ray therapy, conforming quite generally to accepted idea in cases of toxic adenoma. The average basal rate before treatment was plus 29 per cent and afterward was plus 28 per cent.

DISCUSSION IN GENERAL

We wish to mention a few cases that are incomplete and are not included in our series of 35 cases. A woman of 27 was operated recently after being under incomplete observation for a period of a year. She had had four treatments during the last ten months usually with intervals of from two to three months. At the beginning her basal rate was plus 35 per cent. Two months ago on entrance to the hospital she had a rate of plus 13 per cent. The patient wished an operation solely because of the enlargement of the thyroid. Subjectively her symptoms had disappeared and objectively exophthalmos and enlargement of the neck were the only remaining signs of hyperthyroidism. On consultation the surgeon felt that she might possibly have an adenoma in the region of the isthmus, and thought for that reason operation was indicated. At operation she was found to have only an enlarged goiter of the hyperplastic type. The surgeon states that the operation was not more difficult than on the usual untreated thyroid. This is in direct accord with Porter's observation in Boston in correlation with Means' and Aub's work. Rave, from the European side, also states that he can find no greater difficulty in the removal of thyroids which have been subjected to x-ray therapy than in untreated cases. To return to Case 17, mentioned above, which did not respond to x-ray therapy, it was found at operation that the gland was somewhat more difficult to remove than in the usual case.

One other case, which is incomplete, is to be mentioned. A young girl, aged 20, entered the hospital with a basal metabolic rate of plus 65 per cent and was given preliminary x-ray treatment and put to bed. Two weeks later the basal rate was 45 per cent with a corresponding clinical improvement. An acute tonsillitis with peritonsillar abscess developed at this time and for several weeks x-ray treatment was discontinued. After removal of the tonsils under local anesthesia her basal metabolism was found to be plus 80 per cent. At this time she insisted on returning home and two weeks later was operated upon at another hospital, dying dur-

ing the operation. This case is mentioned because we felt that her increasing rate made surgery inadvisable at that time. As is stated by Means and Aub in their work of 1919, "A progressively increasing basal rate is a contra indication to operation."

Another case which left the hospital against advice immediately following the first x-ray treatment died two and a half weeks later apparently from an acute thyro-toxicosis. He entered the hospital markedly febrile, with extremely fast pulse, tremor and exophthalmos. His basal rate on entrance was plus 80 per cent. After six weeks' rest in bed he showed no improvement except for a fall in his basal metabolic rate to plus 54 per cent. An x-ray treatment was administered at this time and on the following day the patient insisted on returning home. A communication from his physician states that he died two and a half weeks after from hyperthyroidism. All other cases have been checked and we now know the condition of the patients in this series at this time. Not one has had a relapse.

Improvement as a rule begins about two weeks after the first treatment; first as a marked subjective response, later as an improvement in the objective findings. The earliest symptoms to disappear are usually tremor, nervousness, insomnia and subjective cardiac disturbances, the latter even if the pulse rate is not materially diminished. In the more severe cases improvement usually comes about more slowly and is first noticeable after the second and third treatments.

In all of the cases, improvement has continued for many months after the last x-ray treatment. This improvement is at a time when the basal rate is nearly normal, the basal rate being used at this time only as a mathematical check upon our patients. We have not attempted at any time to get a minus rate, thereby removing the probability of myxedema occurring. There are two cases in the series where the gland has gradually decreased in size. Exophthalmos has decreased in a few, but in none, at this early date, has it disappeared. Tachycardia has been usually the last symptom to show improvement, and, as must be emphasized, most patients have for a long time retained a tendency to an unstable pulse during periods of unusual stress. This experience is in accord with those treated surgically; improvement is often slow and is only complete after months or even years.

It is known that in severe cases of Basedow's

disease enlargement of the thymus is frequently found. Cappele and Bayer have reported a few such cases where the thyroid was nearly normal in size, and where after thymus removal symptoms have disappeared. Nordentoft reports numerous cases where only after radiation of the thymus as well as the thyroid was improvement noted. Also he reports a few cases where radiation over the thymus alone gave marked improvement but not a complete cure. This may account for some of the early failures in the x-ray treatment of this disease as formerly most roentgen therapists did not include the thymus in the area treated. The routine inclusion of the thymus may account in some degree at least for the better and more lasting results obtained today.

SUMMARY

1. Of twenty-seven cases of Graves' disease without complications who were subjected to x-ray treatment, but were not operated, twenty-four are well, both from the clinical and laboratory standpoint. The treatment has been complete for nearly eight months. The remaining three cases came to operation. Of these three, one, we feel, was definitely improved before operation and the other two were normal a few months after operation. Of six cases of postoperative hyperthyroidism, which had relapsed, one showed a definite cure. The other five showed no improvement. Of three cases of thyrotoxic adenoma none showed any response to x-ray therapy.

2. The only case of our series which was operated during an increasing basal metabolic rate died an operative death.

3. We feel that the results obtained in the earlier cases might have been attained more quickly if more intensive therapy had been used.

4. No bad results or complications, which we could attribute to the treatments, have occurred in any of our series.

5. From our experience with this treatment we are firmly convinced that, only with the closest possible co-operation between the clinical and roentgen therapist, can satisfactory results be obtained.

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DISCUSSION

DR. W. E. SISTRUNK, Rochester: Dr. Allison's paper is a very interesting one because he has taken up a subject which is being discussed very generally over the country.

In Rochester for many years we have used x-ray as an adjunct in the treatment of exophthalmic goiter, but we have never felt that a great deal of benefit was to be derived from it. A year or two ago, after x-ray exposures were advocated, we treated certain patients with large doses of x-ray. We probably began the wrong way, as we used the treatment in the bad cases, those in which the metabolic rate was high, from 65 to 90 per cent above normal. From all I am able to learn from conversing with men who are doing this work, these are the cases which respond slowly to x-ray treatment and we were disappointed in the results. Although we got a drop in the metabolic rate and could see improvement in some of the patients treated with x-ray, the patients under ordinary medical treatment usually improve, and for that reason we never become enthusiastic in regard to the x-ray treatment.

Had we started with milder cases perhaps we would have been much more favorably impressed, because I understand the mild form of the disease is much more likely to respond to x-ray treatment.

We get excellent results from operation and as the risk is small, we have preferred this means of treatment. We prefer to operate early in the course of the disease before marked degenerative changes have occurred in the heart, liver, kidneys and other organs. After these changes have occurred the results from operation are not so satisfactory. We can stop the hyperthyroidism and bring the metabolic rate to normal but the degenerative changes persist, and such patients cannot be brought to normal by operation.

I had the opportunity last week while in Boston of hearing this subject discussed on two different occasions at a meeting of the Society of Clinical Surgery. Doctors Holmes and Porter of the Massachusetts General Hospital showed cases of goiter treated with x-ray and other methods. From their discussion I was led to believe that marked improvement was obtained in the cases of early hyperthyroidism. The patients with high metabolic rates did not improve so satisfactorily under treatment. True exophthalmic goitre responded better to treatment than did the toxic adenomas. They felt that better results were obtained with x-ray than by ligation, but that the best results followed subtotal thyroidectomy. When patients failed to respond to x-ray treatment they resorted to thyroidectomy with benefit to the patient.

Dr. Cheever presented four cases. In two of these patients he had used the x-ray for periods of three or four months, with some improvement, but not a cure. These same patients were then ligated with considerable benefit. In two other patients he ligated both superior poles and the inferior vessels on one side and used x-ray. An immediate drop in the metabolic rate occurred. He was unable to explain this rapid drop.

Improvement following the use of x-ray is slow in manifesting itself and this is one of the reasons we have hesitated to use this form of treatment. We feel that when a patient has an active exophthalmic goitre it is necessary to remove this as soon as possible in order to prevent the degenerative changes in the vital organs which are almost certain to occur while it is present.

I feel that Dr. Allison has presented a very timely paper, and I feel quite sure that x-ray is going to be an aid in the treatment of hyperthyroidism.

DR. R. I. RIZER, Minneapolis: We have been much interested in this work and have had the opportunity of seeing some of Dr. Allison's cases. There are several points that need accentuation, one of which is the fact that these cases must be correlated with repeated basal metabolism tests, and unless this is done, one has no way of telling what he is accomplishing. One author reports that he has produced myxedema, and these were cases treated for a long time, one of his cases for eight years, but he did not check the metabolic readings, and since that time by checking his work with metabolic readings he has produced no myxedema.

Another system we have used is to have metabolic readings, about seven to ten, following each treatment, and afterwards to keep them under control for a period of time. Some of the associated symptoms, like tachycardia in the acute cases, will thereby go down correspondingly with the metabolic rate declining; the weight at the same time will go up. In the old chronic cases, where you have true myocarditis, one need not expect to have lowering of the pulse rate with a dropping of the metabolic rate, because you are dealing with a true myocardial lesion, and that will take time and rest in bed, so that following the thyroid care one needs to take care of other conditions in association with it or accompanying it.

Another point is the treatment. Dr. Allison brought out three points, leaving the isthmus or area over the larynx alone because painful, distressing dysphonia has occurred. At other points it leaves an area where the hard rays do not strike it, but they can be hit, and after it is struck it may produce myxedema. By leaving the isthmus one insures against producing a myxedematous condition in the early stages. The small doses will stimulate, but the larger doses will probably cause the gland to atrophy and give the required results with a drop in metabolism.

DR. M. J. KERN, St. Cloud: I would like to bring up one question in regard to the time reading of the metabolic rate. We know that there is a period after treatment, say fourteen days, when there is very little effect produced by the ray. The maximum effect of the ray is present only from about the eighth day on. If the metabolic rate is read or estimated around ten days after treatment, the rate must be read just after the effect of the ray has taken place. If there is no stimulation of the gland primarily

before degenerative changes have taken place in the gland, is it not possible that is the wrong time for estimating the metabolic rate? I am asking for information.

DR. R. G. ALLISON, Minneapolis (closing): In answer to the question with reference to the metabolic rate, we feel that in the first few days after treatment we get a little higher rate than we do if we take it eight or ten days afterward. Whether the nervousness of the patient in going through the treatment had any effect on metabolism, we do not know. But we found by taking the basal metabolic rate of different patients every day, taking many hundreds of them, the basal metabolic rate we would get eight to ten days following treatment was the rate the patient kept. In other words, the most constant reading we obtained, was the one taken on the eighth or tenth day following the treatment. If we treated a patient today and had a basal metabolic rate of forty, and we took the rate tomorrow or next day he might have 40 or 55. If we took the rate ten or twelve days after treatment we would get a rate which represented the rate which remained until after the next treatment.

In regard to the x-ray treatment of hyperthyroidism, we started out by treating the ambulatory cases. We treated some patients whose rates were as high as 50 plus, some where it was not over 20. The average was 34 to 36. All were not treated under favorable conditions. Most cases represented people who could not go to bed and we could not therefore always judge our results.

If we take cases with a basal metabolic rate of 65 to 80 and a damaged myocardium, we will not improve the condition any more than we would from surgery, probably not as much. We can often bring these people down to a normal basal metabolic rate, but they die of decompensated hearts.

THE NEXT STEP IN THE CONTROL OF TUBERCULOSIS*

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Those among you who have been associated with this organization since its beginning must enjoy a measure of satisfaction in viewing the results of your efforts for better health conditions.

Those of you who have become associated with the organization more recently must have the satisfaction of having invested in a growing concern—a paying venture.

There are indications that point to the ultimate success of our campaign against tuberculosis. I say, "our campaign," advisedly. There are those who make the charge that the steady and remarkable decline in the death rate of tuberculosis of the lungs from 181.8 in 1900 to 111.3 in 1919 has not been due in any degree to the so-called "anti-tu-

berculosis campaign." This is hardly the time or the place to prove or disprove this contention; it should suffice, however, to mention two points. Life insurance companies have taken the greatest degree of interest in the subject of tuberculosis and its decline and give the anti-tuberculosis campaign great credit for the accomplishments so far which are growing year by year. I would suggest that the December, 1921, number of the "Journal of Out-Door Life" be referred to in this connection, as an interesting article appears there by Mr. Frankel, of the Metropolitan Life Insurance Company.

The second point which can be made in support of the anti-tuberculosis campaign is that, wherever communities effect a concentration of recognized anti-tuberculosis measures, the results have been startling. In 1909 a district in Finland was selected for a large-scale experiment in anti-tuberculosis warfare. A clinical examination of practically all the inhabitants was made, and then for ten years an intensive anti-tuberculosis campaign was conducted, with a network of dispensaries, propaganda centres, and many other weapons. At the end of this ten years another mass clinical examination was conducted, and it was found that pulmonary tuberculosis has been diminished 33 per cent. Probably the most startling results have been obtained at Framingham, Mass., where, in an intensive anti-tuberculosis campaign, the tuberculosis death rate in five years had been reduced 67 per cent.

At the Mississippi Valley Conference at Columbus, President Miller reported that it was his belief that the states comprising the conference territory had enjoyed a 33 per cent reduction over the rate existing ten years ago. News of this nature should greatly enthuse all of us and lead us to greater activities in our future work and program. Our future efforts against tuberculosis must be greatly increased; a let-up at this time, because of smug satisfaction at the results so far, would be fatal to the cause. In growing communities our activities must be necessarily increased, or the increase in population, in itself, will lessen the rate of success from our efforts, and also as we eliminate by education, better living conditions, etc., some of the great causes for our former high tuberculosis incidents, we have remaining for us some of the more difficult nuts to crack. It is obvious that the improvements which already have taken place have not been sufficient, and it remains for us to select

*Presented at the annual meeting of the Iowa Tuberculosis Association at Des Moines, February 8, 1922.

some of the existing problems, the solution of which may be more difficult than the ones with which we have so far grappled with more or less success.

The future in our campaign looks big to me,—big, in that some of the problems to be met are big, and big in the anticipated results. For years we have preached for and obtained increasing sanatoria and hospitals for the tuberculous. Recently, we have recognized that not all of these accommodations were of the kind or standard required. Many more institutions are needed. The improvement of our present institutions is greatly needed. Many of our sanatoria are sanatoria in name only. There are low standards of equipment and service that cannot be anything but a check on the results to be otherwise expected. There cannot be great enthusiasm expressed in the results of institutions where conditions permit 35 per cent of their cases returning to their homes after so short a residence as one month. Yet, these conditions did exist in a state system of county institutions and the causes were recognized and acknowledged.

The results of institutional treatment are encouraging as far as they go but they do not go far enough. During the existence of our state sanatorium and our fourteen county sanatoria, there have been discharged among those who remained 30 days or longer, 6,683 pulmonary cases of tuberculosis, and although fully one-half were in the far advanced so-called "hopeless stage," 58 per cent of the total were discharged as much improved, arrested, quiescent, etc., to the number of 3,876. What becomes of these 3,876, after we have cared for them at our institutions at an average of seven months each?

A study in 1916 of patients discharged from Massachusetts sanatoria from May, 1912, to May, 1914, showed that 29 per cent were in good condition and at work. Of 273 patients discharged from Otisville, Raybrook, and Montefiore Home Sanatorium during the period from 1905 to 1910 inclusive, a study in 1913 disclosed 60 per cent working, among those classified as cured, arrested, improved, etc. To some, these figures of sanatoria results may be unsatisfactory, but to me they are inspiring,—inspiring, because I think I can visualize the environment into which these sanatorium patients returned, and more inspired am I when I think of our opportunity, rather our duty, to control this environment.

Speaking of the man suffering from tuberculosis, Krause has well said: "It is his reaction to his en-

vironment which brings him to the sanatorium; it is reaction to the ideal environment of the sanatorium that sends him out apparently cured. It is his reaction to the environment that sends him back to the sanatorium." This should give us a hint as to what is before us in our campaign. At present we are doing very little for the discharged sanatorium case, and, in addition, that larger group who have never been permitted hospitalization and who would never require it if they were properly supervised.

Sanatoria have proven the means for the arrest of the active disease. An environment must be achieved which will enable the arrest to become permanent. It has been said that no plan is complete which does not take into account the entire future life of the patient. The time is rapidly approaching when we will all see that this is true.

There are two sides to the question of the after-care of convalescent consumptives. One is the public side, and we can well understand that they should be interested when it is appreciated that of the 6,683 pulmonary cases discharged from Minnesota sanatoria, 3,305 had positive sputum when they returned to their homes. But there is also the individual side. What is to become of him economically? Must he be forced to compete with strong normal individuals for self-support as at present, and without the proper medical supervision? The lack of organized medical supervision of convalescent consumptives employed on a partially or wholly self-supporting basis is, we believe, responsible for the vast majority of relapses and fatalities among ex-sanatorium patients.

We have forgotten that the control of tuberculosis in the individual is a life-long proposition and we have expected our sanatoria to meet this issue in a four to six months' acquaintance with the patient. It may be stated with truth that the period of convalescence from active tuberculosis is a matter of many, many years, if not the individual's entire life. These years need not be necessarily spent in inactivity as to productiveness; in fact, it is far better for the individual and community should he be properly occupied, else we obtain a fat loafer in exchange for a patient.

Something has already been accomplished towards "sheltered employment" so we may say that the experiment has been tried. Possibly the best illustration is the Altro Manufacturing Company of New York, established and controlled for

tuberculosis convalescents. Previous to its establishment by agencies connected with several institutions, 45 to 50 per cent of the convalescent cases relapsed or died within a period of six months to one and one-half years. Since "sheltered employment" under medical supervision became available, the relapses and fatalities have been reduced to less than 10 per cent. However, with this demonstration of what can be accomplished very little is being done by others to provide similar opportunities for the ex-sanatorium case.

Canadian influences seem to have been already aroused in this connection. In fact, the Canadian Board of Tuberculosis Consultants in their recommendations covering the treatment and after-care of tuberculous ex-service men recommend "sheltered employment" in colonies established for the purpose.

We have recently interviewed officials connected with the Veterans' Bureau which has to do with the treatment of active tuberculosis among ex-service men and their vocational training, and it would appear that up to the present time they have failed to appreciate the limitations of a convalescent consumptive, even after vocational training, so far as his ability to return to his original environment is concerned and become self-supporting in competition with normal individuals.

We are greatly interested in having the government officials recognize early these limitations and take the necessary steps to insure success in the attempt of the government to handle their own tuberculosis problem.

The attitude of those intimating the uselessness of an intensive program for the tuberculous ex-soldier is based, we believe, largely on the well-known fact that tuberculous patients restored in part to health by sanatorium treatment do in large numbers relapse. But they fail to perceive that this is no fault of the institution in which they were treated but the fault of our nearsightedness in not taking proper steps in behalf of the convalescent when he has left the influences of our institutions.

Today an ex-service man discharged from an institution because he is an arrested case, enters vocational training. While under vocational training, he lacks proper medical supervision. The number of cases which relapse while taking vocational training is in itself an index of the inefficiency of the present system.

Tuberculosis is a disease, not only chronic in nature, but relapsing in type. Because a man is an arrested case today is absolutely no guarantee that he does not require for a long period of time as efficient medical supervision as he did during the time he was suffering from active disease. This principle must be recognized.

We are recommending that the Government establish convalescent vocational training colonies associated with institutions in which the patient is to be treated for active disease. We are also recommending medically supervised, organized establishments providing "sheltered employment" after vocational training, which should include the patient's immediate family. This establishment need not be closely associated with the institution in which he was treated for active disease.

REPORT OF THE OBSTETRICAL DEPARTMENT OF ST. MARY'S HOSPITAL FOR 1921*

J. R. MANLEY, M.D.

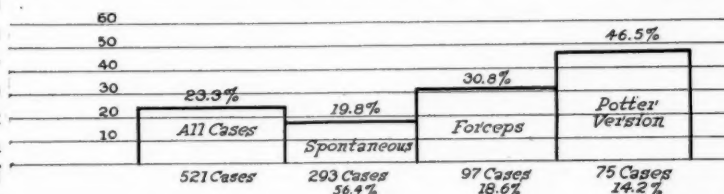
Chief of the Obstetrical Department, Duluth, Minn.

This report is based on all of the obstetrical cases cared for in the hospital during the year 1921, amounting to five hundred and twenty-one. The work was done by a number of different men so that the report will show a fair picture of the work done by the average physician in the city.

I wish to take up first, the question of infections.

I am not prepared at this time to enter into a discussion as to whether a slight fever during the first two or three days of the puerperium is pathological or not. I have taken an arbitrary limit of one hundred degrees as indicating some infection.

You will see by the chart that of all the cases delivered, 23 per cent had a temperature of 100 degrees for one day



*Presented at the Regular Staff Meeting, March 2, 1922.

or more. As might be expected, the cases which were delivered spontaneously showed the lowest incidence of fever, 19 per cent. The forceps cases showed a temperature in 30 per cent, while those which were delivered by version showed the largest percentage of fever, 46 per cent. The chart also shows the percentage of cases which were delivered spontaneously as being 56 per cent, by forceps 18 per cent, and by version 14 per cent. These cases include the temperatures from all causes, whether from slight cold, tonsillitis, pyelitis or what not.

Going over the charts it was not possible to clearly differentiate the cause of temperature in all cases.

Chart No. II is arranged to show the incidence of fever during the different months of the year. The first curve

represents all cases; the second, the forceps cases; the third, version; and the fourth, spontaneous. In June, 1921, we adopted the rule that all men delivering obstetrical cases should wear a cap, mask and gown the same as in the general operating room, although gowns and gloves had been in use before. The months following June showed a slight decline in the percentage of temperatures; this is not very marked, however, and may be due to the lowered amount of respiratory infections during the late fall instead of to the use of masks, although I prefer to give credit to the added precautions. The fluctuation of the curve on the version chart is due to the fact that during the first three or four months, only a very few versions were done, perhaps only one or two during the month.

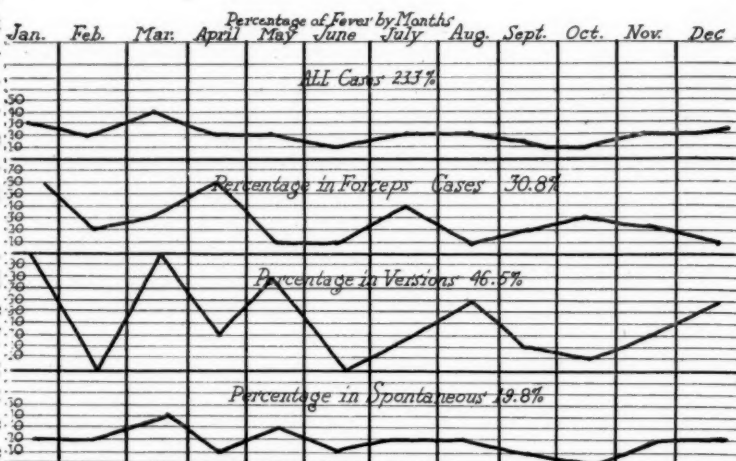
These charts show a rather high incidence of temperatures over 100; however, there has been only one serious case of sepsis resulting in maternal death and that case was infected on admission.

The delivery room technique is satisfactory in my opinion and any further reduction in the ma-

ternal fever will depend on the individual obstetrician in the matter of examinations, being particularly careful not to introduce colon infection into the vagina. In this connection I think we should use more rectal examinations. I am certain that the avoidance of frequent examinations would materially reduce our fevers; we will be forced to do this if our statistics are to compare favorably with other institutions.

There is one suggestion I wish to make in regards to temperature and that is to refrain from

the use of physics following labor, and suggest the use of enemas entirely. This is a great deal easier for the nurses and I believe has some bearing on the question of infection. McPherson of the New York Lying-in Hospital carried on



experiments with a considerable number of cases. He administered physics to a certain number, an equal number being cared for at the same time in the same ward without physics, using enemas entirely. He concluded that there was considerably less percentage of fever in the cases in which physics were not used. I would emphasize the value of a complete general examination in obstetrical cases with fever. A great many fevers are due to other causes than sepsis and the only way to find out whether or not we are getting fevers from breaks in technique is to differentiate the causes. Very few blood counts are being made in these cases; these alone would aid considerably in differentiation.

Fetal mortality was calculated on the number of fetal deaths from seven months of intrauterine life to two weeks after birth. There were thirty-six of these cases, amounting to 6.9 per cent. This percentage of mortality while not extremely high is certainly nothing to be proud of; there is great room for improvement. There have recently been

published statistics of fetal mortality in the neighborhood of 2 per cent and it is significant to note these statistics come from clinics which are notoriously conservative in their methods. The question of a contracted pelvis arises at this point, but I will not go into

that except to state that I believe we should do more Caesarean sections in

this hospital in the cases of disproportion between the child's head and the pelvic canal. Only one was done last year and that was one of my own in which an ovarian cyst blocked the outlet. The pelvis is only one element entering into the question; the calculation as to the size of the baby is equally important.

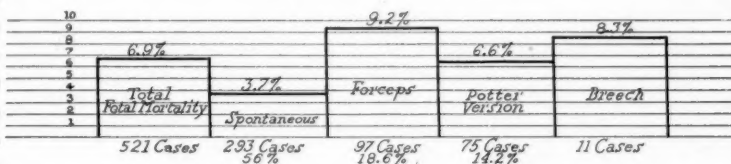
I would also urge closer observation of the fetal heart during labor. The escape of meconium in vertex presentations particularly is supposed to show that the child is in distress and delivery should be hurried if possible. This applies to spontaneous labor as well as to instrument cases. I delivered a case this morning which exemplifies this fact. The woman had been in labor for several hours, but had not made much outcry and was not supposed to be having very hard pains. On examination she was found to be fully dilated, the head was deeply imbedded in the pelvis and there had been escape of meconium for about an hour. The fetal heart was getting very weak and slow and her delivery was hastened by low forceps. The baby was very hard to resuscitate but finally lived and is apparently doing well. I think the head in this case had been in the pelvis for several hours and had been subject to great and prolonged pressure, but, owing to the fact that the mother did not make much outcry, she was not thought to be very far advanced in labor.

I wish to bring up again the question of tracheal catheterization for the resuscitation of asphyxiated babies. In my opinion this is the most certain and best means of reviving these babies. I know of three cases in which I am absolutely sure that if the catheter had not been used the baby would not have been revived. It is a little difficult to introduce a catheter into the trachea upon first trial, but with practice it may be easily learned.

Another point which I wish to emphasize is the handling of bleeders. The coagulation and bleed-

and the necessity of treatment before the symptoms of intracranial hemorrhage appear. The routine procedure adopted at a previous staff meeting is ing time is taken by the interne in all cases and I would urge upon the men the value of these findings

posted in the delivery room and should be followed as closely as possible. The question of



infection in newborns has given us some little trouble; a form of impetigo has appeared from time to time among the babies in the nursery. We have carefully checked the form of technique and can find no break but we have asked all men seeing the babies or entering the nursery for any reason to wear a mask and gown and hope in this way to eradicate the trouble.

In the forceps delivery cases in which group you will see the largest mortality, I suggest that the most common fault that we have here is too rapid delivery; it is extremely important to give the head time to mold while applying the forceps, and for intelligent use of the forceps to know the position of the head.

This chart shows the percentage of fetal deaths occurring in different methods of delivery; this percentage excludes the deaths occurring in eclampsia, dead and decomposed babies, and also monsters. You will see that the spontaneous method is the safest for the baby, having only a 3.7 per cent fetal mortality. It is in the forceps cases that we get the largest number of dead babies (9.2 per cent). I think that some of these cases should have been delivered by Caesarian section, and with more careful use of the forceps and taking more time I think we can cut down this group to a large extent. The group of versions shows a 6.6 per cent mortality. I think the same criticism applies here as to the forceps cases; some of these cases should never have been delivered by version. The total percentage, however, is down slightly below the average for the whole series of cases. The breech cases show a high percentage (8 per cent); there are only eleven cases, however, and perhaps this is not so bad a showing. I would call the attention of the men to the fact that the Potter method of doing version in delivering the shoulders and head is very applicable to the breech cases. Bear in mind the fact that the cervix is rather slow to dilate in breech

presentations and the baby should not be extracted until the cervix is thoroughly dilated.

FETAL DEATHS.

Eclampsia—2 cases.

Decomposed—4 cases.

Still born—22 cases. 2 craniotomy (1 hydrocephalus).

Died in 2 weeks—7 cases.

Dead monster—1 case.

MATERNAL DEATHS—9%, $\frac{9}{10}$ of 1%.

Eclampsia—2 cases.

Shock—1 case (craniotomy.)

Sepsis—1 case.

Resp. Failure—1 case.

Chart No. 4 shows the distribution of fetal deaths. There were two due to eclampsia, four which were dead and decomposed, and twenty-two still-born (two of these were craniotomies on dead babies, one of which was a hydrocephalus). In these twenty-two cases which were still born is where our greatest chance for improvement lies. These cases presumably came into the hospital with live and strong babies, at least nothing in the chart indicates otherwise. That is a rather large number of well babies to lose their lives in the hospital. Seven cases died in two weeks; two of these were bleeders, one of which was not treated soon enough in my opinion; the others died from causes which were not accurately described on the chart. There was one monster, born dead. Maternal deaths made a total of five cases (about .7 per cent). These included two from eclampsia, that is a high percentage considering the small number of eclampsias in the hospital. I would call the attention of the men to the Stroganoff method of treating eclampsia as brought out by the Rotunda Hospital of Dublin: they have reduced the percentage from above 20 per cent to less than half of that by washing out the stomach, irrigation of the bowel, free use of morphin and chloral and letting the pregnancy alone. There was one case of shock following difficult labor in which craniotomy was done. There was one case of sepsis in which the woman was infected and running a temperature when she came into the hospital. The autopsy showed a large abscess in the broad ligaments, in one case in which the death was given as respiratory failure and there was no other cause of death given and no autopsy. All of these deaths have been discussed at the Staff meetings as they occurred and we will not go into them any further. This maternal mortality is too high and should be in the neighborhood of 0.2 per cent.

The standard of obstetrics has been rather low here in the city as well as throughout the county generally. By that I mean that the men have seem-

ingly been satisfied with mediocre results. They take a fatalistic attitude when they lose a baby saying that it couldn't be helped; but they take great credit for saving the mother and father. This attitude is changing, however, and the public will soon demand as good service in obstetrics as they now receive in pediatrics.

SURGERY IN THE PERFORATION OF TYPHOID ULCER*

F. C. SCHULTZ, M.D., F.A.C.S.
St. Paul, Minn.

During July and August, 1920, the prevalence of typhoid fever in St. Paul commanded the attention of both local and state Boards of Health. As every summer has its quota of typhoid cases I take the liberty to present the subject of typhoid fever with special reference to the perforating ulcer, with report of a case.

Mr. S., aged 42, was first seen on June 27, 1920. At that time his temperature was 101, pulse, 78; he felt weak and languid. No diagnosis was made at this time, and because of the excessive hot weather it was thought that he was suffering from insolation. In a few days he felt better and was able to go to work. After about ten days he came home in the evening with a hard chill. This was July 14. He complained especially of pain in his neck and back, and of being very tired in his legs; his throat was reddened, temperature 101. I saw him again July 19. He felt tired and had a pain in his back; temperature 100, pulse 84. The Widal test taken was negative but indications pointed to a typhoid with some reservation because there was no typhoid prevalent. The following day, July 20, his temperature was 100 and pulse 72; he felt better. At three P. M., July 21, he developed a severe pain in abdomen accompanied by a diarrhea. His abdomen was rigid but he had been having so much muscular pain in his back and neck that anything serious was not entertained and morphine gr. one-fourth was given him which gave much comfort, and three hours after there was no pain or tenderness. Nevertheless a perforated typhoid ulcer was suspected and the patient was advised to go to the hospital that evening. That night again there was an attack of pain, again relieved by morphine. The Widal test was again negative and the leucocyte count 15,500. Diagnosis: a surgical abdomen with a possibility of a perforated typhoid ulcer.

Operation 3 P. M., July 22. As soon as the peritoneum was open we had an inflamed and congested bowel presenting. Further in, a fluid with yellow flakes was sponged out and now searching for the ileum we found it a much inflamed bowel, on its surface a fibrinous deposit, a perforation in the center of an indurated area one-eighth of an inch in diameter, about 8 inches from the cecum, and another hole about 14 inches from the cecum, pin point in size. Bowel content came through both these openings.

*Presented before the Southern Minnesota Medical Association, Mankato, December, 1921.

Using the principle of sewing healthy bowel to healthy bowel we were able to close over the perforations. A linen suture was used. The wall of the bowel was rigid and very much indurated and any stitch placed in the area of induration tore out promptly. Extending upward were several areas of induration but how far up was not ascertained as it was urgent for us to get out. There were no other perforations. The incision was closed, using a silk-worm gut double loop lateral stitch. Drainage was established through the wound and another stab wound to the left of the midline.

The convalescence was not stormy, no more severe than a favorable pus appendix. In fact, when I expected his typhoid to continue its course it certainly was abbreviated. This may be due in part to the vaccine which was given.

July 23. Condition fair. Beginning to pass flatus. Pulse remains good. Drainage good.

July 24. Good drainage, abdomen quite soft, much flatus. General condition exceptionally good.

July 25. Feels very well, slept well.

July 26. 10 A. M. Wound dressed. Two drains removed. Abdomen soft.

July 26. 5 P. M. Has had a chill and a temperature rise to 104.4 and a pulse rise to 128, the highest pulse reading during the whole illness. Abdomen was not distended. At the time I found no apparent cause for this sudden rise of temperature and pulse and subsequent convalescence was uneventful.

July 27. Condition all day quite comfortable.

July 28. Feels well. Wound dressed. Abdomen soft, a good free pus discharge from drains.

July 29. Seven days since operation. Abdomen soft and had a large normal stool yesterday. Condition good.

July 30. Another drain removed. Skin stitches removed. Had his second big stool today. Abdomen absolutely good.

August 2. Last drain removed. Abdomen good. Temperature normal this afternoon for the first time.

August 6. Stitches removed. Wound doing well.

He continued to improve and has been perfectly well since.

Two negative Widal tests reported from different laboratories and more than two weeks after the illness began and the sporadic nature of the case caused some hesitation in diagnosis. Nevertheless the aim, when surgery was proposed, was a perforated ulcer in the ileum. The question of the best time to operate arises, and, of course, as soon as diagnosis of perforation is established or if there is a strong suspicion, it is advisable to do a laparotomy at once. No doubt we had a perforation 22 hours before and had our Widal been positive probably operative procedure would have been done at once and the perforation closed. Is it possible that we might have had another perforation on the following day, the case terminating fatally in spite of having closed one perforation successfully?

Typhoid fever is pronounced a disappearing disease and truly when we recall the past few years there has been a dearth of typhoid so that the profession is off its guard and may fail to make a diagnosis. Many nurses graduating in the recent years have not had an opportunity to nurse typhoid nor have they seen any cases. Through the courtesy of our health commissioner, Dr. F. B. Simon, I was able to compile the typhoid cases during the past ten years with the mortality rate. It will be noted that during a four year period there were very few cases, but a small epidemic was evident last summer.

Year	No. cases	No. deaths
1911	123	22
1912	124	23
1913	160	19
1914	161	24
1915	151	18
1916	53	12
1917	42	6
1918	47	9
1919	41	8
1920	104	5
	1,006	146

Mortality for ten years, 14.5%.

Mortality for past year, 4.6%.

Much credit is due the various health authorities for the prompt action in curbing the epidemic. They personally visited all patients and got a complete story of their whereabouts for a certain period. Also the prophylactic vaccine therapy given those exposed has done much to prevent the spread of typhoid, and therapeutically given has probably shortened the illness. In an epidemic in Montevideo, South America, Devincenzi² reports an epidemic of an ambulant form with an alarming rate of perforation. He points out further that the clinical seriousness of the case and the great number of ulcerations are not criteria for perforation.

Pathological Anatomy.—The cause of the perforation is brought out by Devincenzi where he states, "The anatomical cause is a necrosis brought about by a thrombosis of the small vessels of the follicles. If necrosis is complete, we have a perforation and a peritonitis. If necrosis is only partial, not involving the peritoneum, we have no perforation but an intestinal hemorrhage."

As mechanical causes he cites: (1) alimentation

too profuse; (2) defecation with too violent muscular contraction; (3) purgatives or intestinal lavage.

After the etiological agent enters there are four stages pathologically: (1) catarrhal; (2) infiltration; (3) ulceration, with or without perforation; (4) reparation.

As to the relative site of the ulcer in the bowel, there is very little in the literature. The writer, in looking over Osler's magnificent material in the pathological museum at the Royal Victoria Hospital, Montreal, took note of the peculiar uniformity of the lesion being situated antimesenteric.

Diagnosis.—The abdominal picture presented by a perforative typhoid offers nothing that is characteristic. It is the picture of a severe general peritonitis due to a perforation. The presence or absence of leucocytosis does not give absolute assurance whether a perforation exists or not. Blood count and Widal tests have only relative values.

In simple uncomplicated typhoid we have, as a rule, a leucopenia and an increase of leucocytes is of greater importance than change of temperature or pulse rate. A leucocytosis indicates a complication. If a chill accompanies it, it may mean pleural effusion or other pulmonary involvement and a careful search of the chest would clear this condition. When the pulse becomes rapid with a collapse and some pain, the picture is rather plain for a hemorrhage. But, when the pain in the abdomen comes on suddenly and is very severe, the abdomen becoming of a boardlike hardness and the patient lies almost motionless and fears to move; when a tympany of the abdomen develops with or without obliteration of liver dullness, but often accompanied by diarrhea—this is very suggestive of a perforation. Pain is most severe toward the pelvis. However, the local tenderness may not always be in the ileum, as we shall see that the perforations have been mentioned in every portion of the bowel except the duodenum. Pain may be in unusual locations as in the end of the penis, in the perineum, in the epigastrium, or in the left hypochondriac region as reported by Schisler. Another mentions vomiting in 17 out of 19 cases. An important diagnostic hint is given by Peck: "Where local symptoms are very marked and the constitutional fairly severe the indications are for a perforation, but where the constitutional are very profound and the local symptoms not equal to the severity, we must then consider a thrombophlebitis."

The various complications due to typhoid simulating perforated ulcer found by the different writers either at operation or post-mortem are as follows: (1) appendicitis; (2) cholecystitis; (3) perforative cholecystitis; (4) gangrenous gall-bladder; (5) abscess of liver; (6) perforated mesenteric gland; (7) phlegmonous urinary bladder; (8) thrombosis of one or both internal iliac veins; (9) acute intestinal obstruction; (10) acute pelvic infection.

Gangrenous gall-bladder has been found by Mixer due to typhoid infection. Mixer is so enthusiastic over doing a laparotomy for suspected perforation that he urges this done before positive signs are present. He says, "The rule of operating before a positive diagnosis is made is a most excellent one, and a strong suspicion of perforation demands immediate action." Mixer says, "If this serious complication is unrecognized and not operated it is always fatal." Different writers mention acute appendicitis occurring. Hemorrhage may simulate it. Gibbons states, "It is to be remembered that a pneumonia and perforation, and a hemorrhage and perforation may coexist in the same patient." He further reports having overlooked a second perforation, and having reoperated in another case, and found a second perforation. In another, a perforation was found in the ascending colon. Thrombosis of the internal iliac vein has been found at autopsy coexisting with two perforations; in another, a thrombosis of both internal iliac veins with pyelonephritis and intestinal perforation.

Perforation at the junction of the ileum and jejunum and a second perforation in the jejunum, one case with three perforations and one case with five perforations were reported by Gibbons. Stokes and Amick report that in a medical student who had had typhoid fever 13 years ago, an operation was performed for an acute appendicitis. The appendix was found to be gangrenous and about to rupture, and culture taken showed typhoid bacillus. This is an instance of the typhoid carrier.

Gage thinks that, "Here may be included the sharp angulation or stricture found in the appendix at times which may be due to a healed typhoid ulcer." He further reports an acute suppurating gangrenous appendicitis at the beginning of convalescence from typhoid. Bacteriological cultures showed streptococcus and bacillus typhosus. He believes that if more of the so-called accidental cases of appendicitis during typhoid should have

bacteriological examinations, typhoid bacilli would more often be found. Typhoid bacilli also have been found in the gall-bladder seven years after.

Dr. Roger Vaughan, reports on 1,000 cases of typhoid in Cook County Hospital, and twenty-five cases of perforation. Of these, ten were diagnosed at operation, eight by autopsy and seven on clinical findings. All these twenty-five cases died, but he reports that they were all seen late and urges pathognomonic signs be recognized so that the operation be done sooner. Out of 500 cases of typhoid fever 40 per cent were free from pain and tenderness and less than 20 per cent had tenderness. Another diagnostic point is the blood pressure rise which comes on in a few minutes after perforation. In a series of 115 cases the mean systolic pressure in the first week was 115, while in 20 cases of acute peritonitis the mean systolic was 166.

Prognosis.—The immense majority of perforated cases under medical treatment die after a few days of a progressive peritonitis. The statistics of the mortality tables will show very clearly what the prognosis is.

That they may recover is shown by Dr. Peck in the discussion which brought out that a perforation may seal over as in duodenal ulcer. Recalling a case he operated on 20 years after a typhoid, for intestinal obstruction, he found a coil of small intestine matted together. In separating these he found he had a hole in the loop of ileum.

Treatment.—With the ileum so completely involved that the bowel is a stiff indurated tube for the last eighteen inches of ileum, with one or two perforations in this portion, it is quite a problem to safely cover the holes. It is merely a loss of time trying to place sutures in the indurated portion. However, an attempt should be made to close the perforation by suturing healthy bowel over the hole. No tension should be put on sutures, as they surely will not hold.

Dr. Blake brings out the point of leaving the perforation open, only draining when the condition is too grave to warrant much operating. Others advise bringing the bowel to the surface and suturing it into the wound. This may be well advised surgery when the case is in extremis or where multiple perforations are present and resection is ill advised. In the less severe cases it may be advisable to resect a portion of the ileum. This has been done repeatedly. Bazin of Montreal resected 51 inches of ileum and the patient recovered.

Others warn against the resection, saying that even 36 inches of ileum resected is not compatible with life in many cases, as important functions are carried out in this portion of the ileum. In the resected cases that recovered, the typhoid fever came to a rapid end. In those cases where perforation occurs late, after convalescence has been established, the prognosis is claimed by some writers to be better than when it occurs at the height of disease.

When available, Crile's method, gas oxygen anesthesia with novocain infiltration, should be the method of choice. The operation should be performed as rapidly as possible and with generous tampons to prevent unnecessary evisceration. When the operation is done, free drainage should be established. Drainage tubes should not come in contact with suture as this might encourage fistula formation. Counter openings for more free drainage if the pelvis is filled is indicated. Various methods of drainage are mentioned. It does not make so much difference as long as the drainage is sufficient. One method of treatment used by several writers I certainly think should be discontinued, and that is the abdominal lavage with normal saline. This was the method used in one series of ten cases of perforation and all died. Other factors might have been the cause but such a result is food for thought.

When reading over the literature, it is noticeable how many cases have developed hernia, and here I would like to mention the method of suturing. I have long been convinced that there is not another suture so dependable as the double loop lateral silk-worm gut as devised by Dr. A. Schwyzer, when there has been an infection to contend with. After sutures are tied we have a full view of fascia and are able to determine the approximation. Suture tension should not be too great, but this tension will be continued where the figure-eight suture very soon cuts through the skin and the tension is relaxed. With several feet of bowel involved, the chance of several perforations is plain. It was our good fortune to be there at an opportune time. Further, a surgeon is reluctant to do an extensive bowel resection, for here we have a patient who has been sick several weeks, weakened by fever and low feeding and possibly by diarrhea and hemorrhage. It is emergency surgery where the byword is "by all means get in and get out quickly." It is a fact that typhoid patients, as sick as they are, bear laparotomy well.

Von Leyden in 1884 was the first to suggest surgical measures for perforation and that same year Mickulics closed a perforation by suture. He said, "If there is suspicion, don't wait for an exact diagnosis. Explore immediately for it is free from danger."

In an interesting article and discussion by Thacher it is brought out that to err on the side of not operating when surgery was indicated was far greater than to have erred and operated when no perforation was present. These cases from his reports, where no perforation was found but suspected, not only recovered but the convalescence was shortened. Statistics, too, tell us in what percentage of perforated cases there is recovery without operation—it is small. Of 32 perforations in the Royal Victoria Hospital, 25 per cent of those operated recovered and 15.8 per cent of those not operated recovered. This is the most optimistic report found in the non-operated cases. The question arises—were they perforated?

Treatment After Typhoid.—There is no need of removing the gall-bladder from all patients who have had typhoid. But if there are symptoms of cholecystitis and they are carriers of typhoid it may be advisable to operate, although reports declare that the patient may still remain a carrier. Occasionally a gall-bladder is found filled with pus and mucus and gives pure cultures of typhoid. These must be carriers. (Mixer.) It is another reminder that in some of the cases of cholecystitis, pericholecystitis, acute angle deformity in the appendix of apparent cicatricial healing of an ulcer, some of the cases of diffuse adhesive peritonitis of long standing in the cecal and ileal region, are the result of typhoid. If a convalesced typhoid patient becomes entirely well and is not a typhoid carrier, is it not reasonable to suppose that the typhoid bacillus may have been exterminated, as the bacillus of typhoid does not resist light or drying. Sewer pollution could be controlled if there were not a continual reinfection of the sewer by the typhoid carrier with unhealed appendix or gall-bladder. Nowhere in the literature is any mention made of a typhoid ulcer remaining unhealed.

It will be further noted that the mortality rate of 4.8 per cent is very low during the last year. My impression is that the typhoid vaccine therapy may have been responsible for this good showing. A glance at the larger statistics has some points of interest. Statistics gathered by Dr. Garibaldi Devincenzi are the largest found in the literature.

He reports on a total of 22,113 cases of typhoid fever in available literature and in this number there were 825 cases of perforation giving a percentage of 3.73 per cent. General mortality of all typhoid fever averages 8.05 per cent.

Gibbons collected a series of 27 cases that were not operated and all died. In one-fourth of the cases that die after operation for perforation, autopsy showed a second perforation. Perforation predominates in males in a ratio of 3 to 1. Perforations occur most frequently between the ages of 20 and 30 years and are exceptional after 50 years.

Table showing the operative mortality:

Author	Cases operated	Mortality
Gibbons	112	75.9
Ashhurst	86	82.5
Johns Hopkins H.	16	62.5
Keen	158	76.59
Devincenzi	13	61.54

Of all deaths from typhoid the percentage due to perforation is here given by various authors:

Long	.....80	per cent
Hoelscher	.....17.25	per cent
Osler	.....25	per cent
Scott	.....33.3	per cent
Devincenzi	.....34.36	per cent

The size of perforation is designated by various measurements. I have collected from the reports of 87 cases the following:

Size	No.	Size	No.
1 mm.	7	Goose quill	1
2 mm.	6	Pea size	3
3 mm.	5	Small size	9
6 mm.	1	Large size	2
7 mm.	1	Dime	3
1 cm.	3	Quarter	1
1.5 cm.	3	Lead pencil	1
2 cm.	3	Tip of finger.....	1
1/8 inch	5	Half penny	1
1/4 inch	1	Grain of rice.....	5
Pin point	2	Grain of corn.....	6
Pin head	17		

The various locations in which these perforations may appear is best shown by the following table in 106 cases in which the site was designated.

Jejunum	3	Appendix	2
Ileum 40-50 inches..	5	Cecum	2
Ileum 20-40 inches..	10	Ascending colon	2
Ileum 10-20 inches..	28	Descending colon....	1
Ileum 5-10 inches..	21	Rectum	1
First five inches....	33		

Table compiled from cases available in the literature showing the number of cases perforating at the different periods of illness:

5-10 days	7
10-15 days	18
15-20 days	29
20-25 days	21
25-35 days	12
35-45 days	4
47 days	1
116 days	1

It will be seen that by far the greatest number of perforations occur during a two week period from the tenth to the twenty-fifth day.

1. Blake, J. B.: Discussion. J. A. M. A.
2. Devinenzi, Garibaldi: *Anales de la Facultad de Medicina*. April, 1919.
3. Gage, Homer: *Trans. Am. Surg. Assn.* 1915. Vol. 33, p. 132.
4. Gibbons, John H.: *Trans. Am. Surg. Assn.* 1915. Vol. 33, p. 63.
5. Mixter, S. J.: *Trans. Am. Surg. Assn.* 1915. Vol. 33, p. 59.
6. Schisler, Edwin: *Missouri State Med. Jour.* 1917. Vol. 14, p. 398.
7. Stokes & Amick: *Johns Hopkins Hosp. Bull.* 1905. Vol. 16, p. 284.
8. Thacher, J. S.: *Medical Record*, 1917. Vol. 91, p. 311.
9. Vaughan, Roger T., and Halstead, A. E.: *Trans. Am. Surg. Assn.*, 1915. Vol. 3, p. 460.

DISCUSSION ON THE PAPER OF F. C. SCHULDT.

DR. T. L. CHAPMAN, Duluth: In talking with Dr. Schuldt about these cases, he asked me to report briefly a case of my own. I did not see very much reason for doing that, because I tried to point out to him that as far as the moral lesson was concerned, there is none in my case. If there is anything to be learned about a perforating typhoid ulcer after one has seen several of these cases, it is that everlasting watchfulness of the case throughout all the peculiarities of convalescence of typhoid and for a long period afterward, is the only chance that one will not overlook a death dealing lesion of this kind.

In the case under discussion the woman was not thought to have had typhoid, although she came from a part of the country that was notable for typhoid, and where some typhoid had occurred at that time. She was seen rather casually by a doctor in the country for a small illness that seemed to give no exacerbations, and he believed it to be a recurrent series of attacks of appendicitis. He saw her soon thereafter with a stiff belly, with vomiting, pain, etc., and sent her at once to town, where I opened her abdomen with a view to confirming the diagnosis of a presumed rupture of the appendix. As a matter of fact, she had three perforations simultaneously within nine inches of the ileocecal valve, one larger than my thumb nail and in such a position and of such an extent that no closure could be made. I presumed at the time they were typhoid ulcers, and in spite of that did an end-to-end anastomosis. At that time I was deeply under the influence of Dr. Con-

nell's work, and used his circular suture. The woman should have died theoretically. She was brought forty miles after perforation of her ileum in three places. She had an extensive peritonitis at the time I operated. In the face of that resection and in the face of the difficulties I did an end-to-end enterorrhaphy, and she got well.

CHLOROFORM ANESTHESIA*

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In spite of all the advances made, the questions relating to anesthesia are still far from being settled. Dr. Keen in his surgery says, "The ideal anesthetic will not be one which abolishes pain, without abolishing consciousness. To have the patient aware of surgical emergencies, which test the veteran operator's skill and endurance to the utmost, would frequently invite death by the terror which it might occasion. The ideal anesthetic will abolish pain by the abatement of consciousness, but without danger to life." Hence the ideal anesthetic, at least for severe operations must necessarily be a general one in view of the opinion of our best surgeons.

That the ideal anesthetic has not been found is evidenced by the numerous ones in use, singly and in combinations,—chloroform, ether, ethyl chloride, nitrous oxide, nitrous oxide and oxygen, nitrous oxide, ether and oxygen, etc. Different men use different methods and combinations.

In this country, chloroform has gradually been replaced by ether and more recently by nitrous oxide; alone and in various combinations. Although nitrous oxide has been hailed the safest of all the general anesthetics, yet Gwathmey and Greenough¹ say, "Advocates of straight nitrous oxide and oxygen anesthesia are probably responsible for more deaths than are the advocates of any other one anesthetic or single method. When a patient is saturated with nitrous oxide with sufficient oxygen to maintain satisfactory anesthesia, he is bordering on, or may be in the danger zone and the next step will be respiratory arrest and death." This tends to show that nitrous oxide is far from being the ideal anesthetic.

I well realize that for a physician to defend the use of chloroform anesthesia at the present time

¹Gwathmey and Greenough: *Annals of Surgery*, Vol. 74, p. 185, August, 1921.

*Presented before the Southern Minnesota Medical Association, Mankato, December, 1921.

is about as popular a pastime as to stand up and defend the Non-Partisan League in a Republican County Convention. Yet I feel that chloroform has a definite place in anesthesia and that it should not be lightly discarded. Medical men are prone to adopt new fads, often at the expense of old and tried remedies, often substituting more dangerous and less reliable methods before they are fully tried out.

I do not intend to present a scientific paper nor to quote a mass of statistics, but shall treat the subject only from the basis of my own observation as a general practitioner who has administered chloroform in several thousand cases.

That chloroform as an anesthetic is absolutely dangerous and that ether is absolutely safe is a statement very often seen with many variations and modifications in medical literature. Both statements are of course incorrect. I well realize that for an operation of length where the patient must be absolutely and thoroughly under the anesthetic for a long period of time, ether is a much safer anesthetic than chloroform and should invariably be given. But in the hands of the general practitioner chloroform has a place which I do not feel that ether can completely fill. While for short anesthesia we have other agents such as nitrous oxide gas and chloride of ethyl, skilled assistants are too often lacking, and, without them, I do not feel that nitrous oxide gas and chloride of ethyl are as safe as chloroform, to say nothing about the cumbersome apparatus needed for the administration of the former.

One reason why chloroform is so much feared as an anesthetic is no doubt because of the fact that when chloroform kills, it does so more or less suddenly; consequently, there is no doubt as to where to place the blame. Ether may, and no doubt often does, cause death days and even weeks following the administration of the anesthetic, death being due to pneumonia and its complications or destructive changes in some vital organ. Owing to the length of time that has elapsed since the ether was administered no doubt the operation often receives the blame when the anesthetic was really the cause of the patient's death. Certainly pneumonia is not an uncommon complication following ether anesthesia and as a rule the mortality in these cases is not a small one. Sudden death on the operating table when ether is administered occurs frequently enough to show that even ether

is not an absolutely safe anesthetic. I believe that if our statistics, relative to anesthetics, could show the actual number of deaths directly and indirectly, primarily and secondarily due to ether, that the difference in the mortality rate of chloroform and ether would be far less than we are taught to believe.

Ether being considered so safe by many men no doubt often tends to a false sense of security and frequently makes the surgeon both slow and careless. With a feeling that the patient is in no danger it is not so very unusual in some clinics, especially in our large cities, to see patients kept under ether anesthesia for ten to thirty minutes before the operation while the surgeon is washing up or lecturing. Ten to thirty minutes of unnecessary anesthesia can hardly be considered a good thing for the best interest of the patient and if it was not because of the fact that ether is considered so relatively safe the practice would no doubt be less common.

I believe that to give chloroform well as an anesthetic is an accomplishment many men do not possess and are apparently not willing to learn, and that a physician who is in the habit of giving ether is by no means a safe man to administer chloroform. Chloroform should under no circumstances be forced, but should be given very slowly and a much longer time consumed to put the patient to sleep than is usually considered necessary; much more air should be allowed than is generally the case. The mask used should be made like the ordinary ether inhaler used for the drop method of anesthesia, but can be somewhat smaller; the amount of gauze covering said mask should ordinarily not be more than four or five thicknesses of a medium weight gauze. The small glass ampule now on the market is an ideal container for chloroform when used as an anesthetic. The point should be broken off so as to leave a very fine opening, hence insuring a minute drop which given slowly on the open gauze mask insures the patient of a relatively large amount of air inspired. Personally I believe in watching the patient's color and respiration more than anything else, though the heart cannot, of course, be slighted. Do not fail to frequently remove the mask from the patient's face during the administration.

When by force of circumstances, as frequently happens in a general practice, a doctor is compelled to have a short anesthesia for a minor opera-

tion, say following an accident, such as placing a few sutures, ligating an artery, setting a broken bone, reducing a dislocation, etc., given a patient entirely unprepared, stomach full of food, it is often possible to give chloroform, do the operation and have the patient ready to go home in a comparatively short time. If the day is cold and stormy, I do not feel that it is safe to send the patient to his home right after administering ether, especially if he lives some miles in the country, but do not feel the same degree of hesitancy when chloroform is used, and often allow them to go home in an hour or two from the time the anesthetic was administered.

Personally, I like ether anesthesia and a suction apparatus for removing tonsils and adenoids in children under fifteen years of age, but we have operated on several hundred patients by using chloroform anesthesia and the Sluder method of removing the tonsil. With chloroform a light anesthesia only need be used and the operation and the anesthetic together can be completed in a very few minutes, certainly in less than half the time that would be necessary were ether used. However, I am not advocating chloroform anesthesia in this class of cases, but, given a young patient with the post-nasal space packed full of adenoids, with badly infected tonsils and a generally weak physical condition, choking with a throat full of mucus, I am not so certain but that a light chloroform anesthesia and a rapid Sluder or Beck operation followed by a quick removal of the adenoids, all taking, in skilled hands, but a few minutes at the most, is not a relatively safer method than the one often seen in some nose and throat clinics where the anesthesia, from the time the ether is commenced until the operation is finished by a most tedious dissection, occupies in the neighborhood of an hour's time. The fact that pulmonary abscess occasionally develops in these cases is not to be wondered at. In fact, it is rather surprising that it does not happen oftener. One of the advantages of chloroform in these cases is a comparatively rapid anesthesia. But little screaming and struggling and frightening of the child occurs and there is freedom from mucus in the throat, rapid recovery from the anesthetic and much less danger from an aspiration pneumonia or pulmonary abscess.

In obstetrics, chloroform is holding the field to the exclusion of other anesthetics with quite a number of doctors; in fact, many men who seldom use

chloroform in the balance of their work have found it hard to do away with it entirely in their obstetrical practice. While many methods are in use, the following has served me well. A small heavy inhaler, with two tips that fit into the patient's nostrils, is packed with enough absorbent cotton so that it will hold two or three drams of chloroform. The patient is allowed to hold the inhaler herself and instructed to inhale the chloroform as soon as she feels the pains coming on. If she goes to sleep, the inhaler, being heavy, drops out of her hand to be picked up again with the next pain. I have in slow, tedious cases of primiparae often used chloroform in this manner for hours and have never seen any bad results from it. The total amount of chloroform actually inhaled is small. The relief from pain both actual and psychic is very marked. The edge is continually taken off the pains and the patient feels that she is being helped and that something is done for her. When the head passes the perineum it is a simple matter to give her sufficient chloroform on a towel or napkin to get complete analgesia and if a rupture threatens the perineum and complete anesthesia is wanted, a few minutes will suffice to reach it. If the placenta is to be expressed by the Creaé method or a few sutures are to be placed, a light chloroform anesthesia is thus easily gotten. The above outlined method of anesthesia in obstetrics has been used for many years and no evil or untoward results have been noticed. I have used ether in obstetrics but do not feel that it can ever take the place of chloroform in this class of cases. With me it seems that chloroform used in the previously described manner is about as ideal a twilight sleep as can well be imagined. Perhaps the more modern method of using nitrous oxide gas may be preferable, but with the cumbersome apparatus necessary and the lack of skilled assistance usually encountered in general practice it will not become popular in the country at least for some time to come.

I would like to say a few words about the use of chloroform for the induction of so-called primary anesthesia (the so-called chloroform or ether rousch of the Germans)—a method that has been known for many years and, while no doubt used by many physicians, does not seem to be universally understood. Primary anesthesia will often suffice for the pulling of a tooth, lancing of a boil, felon or other deep infection, an infected toe or finger nail, removing of a painful splinter, reducing a dis-

located shoulder, and will do in a considerable number of fractures. In fact, it is an ideal method for the performance of any operation that can be done quickly or at least in a very short time, without deep or lengthy anesthesia. It is often extremely valuable where you are dealing with an unusually apprehensive patient. The following method is used.

Drop the chloroform in small drops on the mask prepared as previously described. Count slowly but loudly, one, two, three, four, etc., and let the patient repeat. When the patient loses count or miscounts, drop the chloroform rapidly for a few seconds, remove the mask and proceed with the operation. In nearly every instance the operation can be done absolutely without pain. The patient will wake up almost immediately after the work is done and state that he felt no pain whatsoever, but often adds that he knew the operation was taking place. He will usually be able to walk about the room in a very short time, only feeling a bit dizzy, and can ordinarily be taken home very soon. Personally, I have used the method hundreds of times and have never seen any bad effects from it and in very nervous patients it often gives wonderful relief. Even with the stomach full of food they will rarely vomit when this method is used, and, if they do, it will be after all is over and the patient awake. It will then do no harm as there is no chance for aspiration. For that reason alone it is often of great convenience following accidents as well as for many of the short operations mentioned previously. The method is deserving of much more attention and consideration than it has had from the profession. In fact many doctors seem to be entirely unfamiliar with its application. Ether can be used in a somewhat similar manner but to me at least it has never seemed to be so effective.

In conclusion.—The difference in safety in administration between chloroform and ether is probably far less than commonly stated, as numerous deaths are indirectly caused by ether that are not so classified in the statistics.

Chloroform has a number of good qualities that we should not overlook and I cannot agree with many physicians who seem to think that chloroform should be banished entirely as an anesthetic.

Many physicians who deprecate the use of chloroform do not know how to properly administer it and are apparently unwilling to learn. I grant that chloroform anesthesia is not safe with the inexperi-

enced interne, the unskilled nurse, occasional bystander nor the man who is ordinarily in the habit of administering ether.

I do not wish to carry the idea that chloroform can displace ether nor take the place of it for lengthy and deep anesthetics; but that, given a suitable case, properly administered chloroform has a place in our armamentarium that no other anesthetic hitherto used can fill quite so well.

DISCUSSION ON THE PAPER OF DR. P. F. HOLM

DR. O. C. STRICKLER, New Ulm: The subject of anesthesia is a very important one. Surgery is becoming more and more popular, so that the giving of anesthetics is becoming more and more frequent, and a discussion of chloroform anesthesia, ether anesthesia, nitrous oxide gas, or whatever anesthetic is used, is certainly one well worthy of serious consideration. However, I would criticize the statement of the essayist that ether is liable to produce sudden death. I doubt whether that is the case. Furthermore, I doubt whether any person should use chloroform alone except in obstetric work.

I visited a colleague in a neighboring city who told me of an unfortunate experience he had in the case of a boy, twelve years of age, who was brought in with an injured foot. The doctor proceeded to give an anesthetic so that the injured foot could be examined. He gave chloroform. The ankle was examined, and when the practitioner finished his examination he was horrified to observe that the young fellow was dead. Had he given ether I doubt if that would have occurred. I would repeat, that in the administration of an anesthetic for an injury, for any condition needing a close examination, be it a case of dislocation or of fracture, ether is preferable. I do not criticize the administration of chloroform in obstetric work. There the anesthetic is given intermittently, but in general work, when the doctor is alone, I doubt the propriety of giving chloroform. I doubt whether we should give chloroform on account of the difficulties that we have in cases of malpractice or in case an untoward accident occurs. I doubt if the profession would support us if we had a death or any unusual condition occur if we had used chloroform.

In later years we have used ether almost entirely. We have used chloroform in selected cases, and also in primary anesthesia preceding ether. I do think, however, that chloroform has its place, but I think its use outside of obstetric work and outside of some limited cases for the general practitioner should be limited.

DR. RALPH T. EDWARDS, Elysian: With regard to sudden death under anesthesia, it is a thing that has not occurred in my practice, but it was threatened once. That was when I used ether anesthesia. Having used ether as an anesthetic for a minor gynecological operation on a patient who was very much weakened and the operation having been successfully completed, in about ten minutes after the anesthetic was discontinued the patient suddenly stopped breathing. It took us half an hour before we could get a single respiration from that patient. I simply state this

case as a fact. I am not arguing that ether or chloroform is especially dangerous, but am stating this case for your benefit. Personally, I am afraid to use chloroform in such cases as that. I use chloroform only in obstetric cases.

DR. BYRON O. MORK, Worthington: With regard to chloroform, I remember how we had it drilled into us at school that this was not a safe anesthetic to use. Where I served my internship there were several surgeons, graduates of European universities, who insisted on the use of chloroform as an anesthetic. I was afraid at first and gave it only because they insisted on its use. I had to take a real course in chloroform anesthesia. And I think now the trouble with us is that we have given ether so much we do not know how to give chloroform. We are apt to crowd it too rapidly. If we give plenty of air with chloroform, it seems to me, we can get along very nicely with it. I realize it is not popular, and I do not use it a great deal myself. If I gave the anesthetic myself, I would not be afraid to use it for any operation.

DR. P. F. HOLM, Wells (closing): I expected my paper to provoke a great deal of discussion, as that was one of my reasons for presenting it.

I do not think I feel very differently about anesthetics in general from what the rest of you do, but I do feel at the present time there is a tendency to limit ourselves too closely to ether; that we have probably gone too far in the use of ether. I feel that chloroform has a place, and that if you learn how to give it, and properly use it, it is of value and should not be relegated to oblivion entirely. That a sudden death may occur on the table with chloroform I am willing to admit, but sudden deaths on the table occur also with ether.

THE THYROID AND ITS RELATIONSHIP TO NERVOUS AND MENTAL SYMPTOMS*

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In the beginning of this discussion on the nervous and mental symptoms of the toxic thyroid, it is perhaps in order to state that the nervous elements of the body are affected by the same things and in much the same way as the other tissues. The pathology of congestion and inflammation in the brain is much the same as the pathology of congestion and inflammation in the liver. The symptoms are vastly different, not because of a diverse pathology, but simply and solely because of the difference in the function of the two organs. Since the nervous system furnishes the activating energy, which is absolutely essential to the functioning of all the other organs, naturally disturbances in its function would tend to disturb function in general through-

out the system. The result of this general disturbance in function is the production of toxins; toxins on the other hand, in themselves, affect function. Herein lies the so-called vicious circle, the best illustration of which is seen in functional nervous disturbances—a cause in one place produces an effect somewhere else, and the effect thus induced becomes the cause of another disturbance, and so on.

It is very difficult to consider toxic symptoms of nervous origin produced by the dysfunction of the thyroid alone, because the thyroid is so closely connected with so many other organs of the body where the abnormal function of one seems to depend to a large extent on the abnormal function of the other.

Stengel has expressed this relationship very aptly when he says that the more one studies the function of the thyroid, the more one realizes that its dysfunction is an algebraic sum of many morbid processes, some of which arise in the thyroid gland, others in the parathyroids, others in the pancreas or adrenals, or in the general metabolism of the liver itself. This statement of Stengel's is incomplete without the inclusion of the nervous system as one of the morbid processes.

The nerve supply of the thyroid is furnished by the vagus and cervical sympathetic. Both these nerves have other important functions in addition to their thyroid activity. Although they belong anatomically to the sympathetic nervous system in so far as function is concerned, they are in direct connection with the cerebrospinal system. Any disturbance in the one produces an effect in the other.

Cannon has observed in his experiments that stimulation of the vagus and cervical sympathetic nerves causes an increase in the thyroid secretion in from five to seven seconds. Recently C. Cerni* has reported that removal of the cortex of one cerebral lobe or of the surface of one cerebral hemisphere in dogs and birds causes pathological alterations in the thyroid gland itself. His conclusions from these experiments are that in vertebrates superior thyroid centers exist which are disseminated in the mass of the whole fore brain and in mammals over the entire cerebral cortex. These superior thyroid centers have a trophodynamic inhibitory function which acts in opposition to the accelerator function of the genetic centers by preventing an excessive function of the peripheral origin and by regulating

*Presented before the St. Paul Clinic Week Meeting, January, 1922.

*C. Cerni: "Brain and Thyroid Function," *Archives neurology and psychiatry*. Volume 6, No. 4, page 451.

the circulation and by maintaining, in normal degree, the trophic processes of the different thyroid elements, especially the parenchymatous ones. In other words, the brain regulates thyroid activity very much in the same way as the governor regulates the speed of a steam engine. The author points out that the results of these experiments call for a revision of many clinical problems, especially in neuro-psychiatry, in view of the present tendency to interpret any alteration of the thyroid gland as a cause rather than as an effect.

The action of brain tumors in causing disturbances of thyroid function is interesting in the light of Cerni's conclusions. In a recent number of *The Neurologische's Central Blatt*, a case of tumor of the brain cortex was reported where the chief symptoms were those of a myxedema. In my own experience, I can recall two very similar cases. In the first case, the absence in the beginning of either general or focal symptoms of a cerebral nature led to a provisional diagnosis of myxedema. In the other case, although symptoms of cerebral pressure were present, the myxedematous type of symptom characterized the clinical picture. In this case, the basal metabolism was a minus 25. Heretofore such symptoms had been attributed to pressure of the tumor on the pituitary gland, in this way producing an effect on the thyroid. Cerni's experiments suggest another and more plausible explanation.

The influence of the brain cortex on thyroid function is perhaps best observed in the nervous and emotional type of patient. Numerous cases are reported in the literature where Graves' disease developed suddenly as the result of an intense emotion. I can recall three such cases, all of which occurred in young women. In one case the patient started to walk across a railroad bridge and, when about half-way across, she saw a train coming. Another was attacked by a savage dog. The third was the result of a street car collision.

We observe the influence of cortical activity on the sympathetic nervous system in many ways. Under intense emotion the menstrual flow stops or starts. One person may break out in a cold perspiration. Another may become very nauseated—another symptom, by the way, of disturbed vagus function. In each case, as the result of the emotional state, a change in function occurs. In the interest of clearness and simplicity in our understanding of thyroid disturbances and their effect, the pity is that there are so many other subscribers

using the same line. If one of these others happens to put this line out of order, it is logical to presume that thyroid function will suffer also. The identification of symptoms which have their origin in thyroid pathology alone is no easy task.

There has been much discussion, as well as experimentation, as to the rôle which the thyroid plays in the etiology of the acute psychoses. The most we can say at present is that the thyroid is involved in the general disturbance. It has been said that, in the insane where hyperthyroidism is present, the mental condition is apt to express itself as one of exhilaration and mania; and with hypothyroidism, the reverse—depression and melancholia. My experience would not confirm any such general statement as this. At present I have under observation a young girl with typical symptoms of Graves' disease, yet her depression is the predominating one in the clinical picture.

What a *pot pourri* this whole subject is insofar as it touches the psychoses, both acute and chronic, is well shown in the "Dialysis Verfahren" of Faustner and Aberhalden. By this method, so-called protective ferments are present in the blood serum in the various types of psychopathic states and these protective ferments cause organ decomposition in differing ratios. For example, in 50 cases of psychopathic individuals whose blood serum was examined according to this method by Gottfried Ewald,* he reports his results as follows:

Brain decomposition	72%
Sex glands	72%
Thyroid	76%
Liver	36%

The reports of the other observers with this procedure are fairly uniform,—enough so at least to permit of the conclusion that in the blood serum of persons with psychic imbalance, there are what may be called anti-bodies which the sera of normal individuals does not contain and these anti-bodies cause the destruction or decomposition of organ tissue, the thyroid among such other organs as the brain and sex glands quite regularly being involved. The results of such methods of examination are interesting thus far only in that they serve to show us the actual participation of the thyroid in the causation of nervous and mental conditions. Like, however, the anti-bodies in the blood of syphilitics

*Gottfried Ewald: "Untersuchungen über fermentative Vorgänge in Verlaufe der endogenen Verblodungsprozesse," *Archiv für Psychiatrie und Serumkrankheiten*. Bd. 60, Heft.

which cause the Wassermann reaction, their genesis remains as yet unexplained.

The number of mental cases in which a definite and positive hypothyroidism is present, according to the consensus of medical opinion, is somewhat rare. On the other hand, the percentage of such cases, which have what is called the non-toxic type of goiter, is remarkably large.

The following case illustrates quite well the complexity of the thyroid problem in its relation to the ordinary psychosis:

Miss N.: Referred by Dr. George Earl; age, 43; family history, not good; one sister insane.

Personal history: Peculiar from childhood; subject to moods and caprice; fits of very bad temper. The other members of the family rather stood in fear of her and let her have her way. Along with these qualities, she was very industrious and showed capacity in her occupation as a dressmaker. In 1912 was operated on for exophthalmic goiter, and had five-sixths of the gland removed. Her improvement was satisfactory. Tremor, tachycardia, etc., disappeared. Exophthalmos remained uninfluenced, as it usually does.

In 1916 she was operated on again because of a return of her old symptoms. This time again five-sixths of the gland was removed.

In 1919 the patient returned because of a tumor in her breast, which was diagnosed as a carcinoma, and the breast removed. With the exception of the exophthalmos, there were no other apparent symptoms of hyperthyroidism at this time. Sugar was found in the patient's urine as high as three per cent and an additional diagnosis of diabetic mellitus was made.

In August, 1921, the patient was returned to the hospital because of definite mental symptoms. At this time she was rather thin and emaciated. There was a generally diffused melanism of moderate degree. No thyroid tissue was palpable. Exophthalmos marked; sugar present in urine in varying quantities according to the rigidity of the diet. Pulse rapid but not more so than usual in the agitated mental case. Many of her mental symptoms were of the type found in patients with the so-called insanity of exophthalmic goiter. She changed suddenly from a catatonic state to one of violent outbreaks, manifesting extreme irritability and capriciousness. Her condition at present remains unchanged.

In the study of such a case, it becomes quite evident that the dysfunction of the thyroid is only one factor in a constitutional physical and psychic inadequacy. The emotional and unstable personality was constitutional. Furthermore, it is interesting to note that the severest expression of her physical and mental instability, namely, the diabetes and insanity, did not manifest themselves until a number of years after her hyperthyroidism was entirely

relieved; the diabetic symptoms appearing three years after her last goiter operation and the acute mental condition, five years. It is in the contemplation of such cases that one realizes the truth of Stengel's statement, that thyroid dysfunction is an algebraic sum of many morbid processes. The eccentricities of her early life, her moods, temper, capriciousness, were but manifestations of this fundamental inadequacy. Her emotional instability was the predominating factor. The thyroid dysfunction may be regarded as secondary and no doubt to a large extent caused by the unstable nervous condition.

Dèjerine has stated that exophthalmic goiter occurs in neuropathic families. He looks on exophthalmic goiter as a form of hereditary neurosis. In this connection, two cases suggest themselves. The one of the girl previously mentioned who suddenly developed a goiter and symptoms of hyperthyroidism over night, as the result of a fright caused by the collision of two street cars. The mother of this girl had a simple goiter, as also did a sister. An aunt, on the mother's side, had an exophthalmic goiter and died in a state institution for the insane. The mother, about a year after her daughter's shock, began to manifest delusions of persecution and inside of six months developed a pronounced dementia. She was then forty-six years old. Her symptoms, if the thyroid was a factor, resembled more those of a hypo rather than a hyper activity, but careful thyroid administration failed to make any improvement in her condition.

In another case under my observation at present, a girl of nineteen has typical symptoms of the exophthalmic type with thyroid enlargement and hyperactivity. However, these symptoms were not noticeable by her mother. The patient was brought to me because of severe depression. I had previously taken care of her mother, who had a simple goiter, in an attack of manic depressive insanity.

I cite these cases not as unusual happenings, but rather as frequent experiences in goiter patients, which indicates that the goiter, whether it be of the hypo or hyper type of activity, seems to be a factor. The absence of improvement from either partial removal of the gland in which hyper activity is suspected, or thyroid administration where the symptoms suggest the reverse in unusual patients, is good evidence that the thyroid function is only a part of a general maladjustment, and consequently that the fundamental etiological factors are to be sought

elsewhere. In many of our mental cases, especially those of the hebiphenic type of dementia precox, it has been thought that hypothyroidism per se might be a factor, but the basal metabolism rate in such cases as we have had examined was found to be within normal limits and, moreover, thyroid feeding, even when gradually increased as high as 75 grains of the dried extract per day, produced no appreciable change in the patients' mental symptoms.

Exophthalmos, which one must admit is of frequent occurrence, occurs in 70 to 80 per cent of the cases of typical hyperthyroidism; the part the thyroid plays is still debatable. There remains the 20 or 30 per cent of also typical cases in which it is absent. It is the one symptom which is very apt to persist after thyroidectomy, although the other symptoms, such as the tachycardia, tremor, temperature, etc., have entirely disappeared. The cause of this bulbar protrusion at present is thought to be due to a stimulation of the cervical sympathetic. Recently* it has been suggested that the thymus gland had more to do with the causation of this particular symptom than the thyroid. Bircher experimentally produced in dogs tachycardia, nervousness, tremor and exophthalmos by the injection of thymus products into the peritoneal cavity. Crotti repeatedly found these symptoms developed moderately after thymus injections. In Friedleben's experiments after section of the sympathetic, atrophy of the thyroid occurred. By analogy atrophy of the thyroid remnant, as found in myxedema, may inhibit the action of the cervical sympathetic. In my own observation, one of the most constant of the stigmata of a psychopathic state is a bulbar protrusion; to be sure not often to the degree in which it is found in Graves' disease, but, nevertheless, to the extent of being plainly recognizable, definite and positive. In these cases, von Graefe's sign is very often found, if it is sought.

There has been a good deal written recently about hyperthyroidism in the soldier, the kind with rapid pulse, cold hands and feet, hyperidrosis, the tendency to become exhausted easily, in short, the asthenic type. No doubt dysfunction of the thyroid is in some degree responsible for this condition, but the point I wish to make is that it is not the cause. The dysfunction here is only one of the

many morbid processes which, until we make further progress in our knowledge, we can only designate as stigmata of a constitutional neuropathic state. In such cases, the influence of the brain cortex is plainly shown. These individuals, under normal conditions where they are free from stress and strain, do very well, but just as soon as pressure is applied, their two nervous systems (cerebrospinal and autonomic) seem to become short circuited, as it were, and these symptoms are the result of a general dysfunction.

In one patient there are irritable vasomotors with tachycardia, some degree of bulbar protrusion, cold, discolored, sweating hands and feet even to the point in extreme cases of Raynaud's disease; in another, migraine and angio-neurotic edema; in still another, emotional disturbances with some or all of the above mentioned symptoms occupying the background. In one instance the etiology may be that of an infection either focal or general; in another, psychopathology entirely or a combination of both. In any case, the fundamental and predisposing cause must be regarded as a *sine qua non*. Such things do not occur in the normally adjusted individual.

After one has read the mass of contradiction as to the opinion in clinical experiences and, worse still, in animal experimentations in this field, his mind becomes filled with confusion and bewilderment. Only in a comparatively few cases are we at present able to make a fairly good adjustment as, notably, in thyroidectomy in selected cases of Graves' disease and thyroid administration in cretinism and myxedema. The great majority of these patients respond unfortunately thus far only by the methods of an indirect attack,—that is, by the exposure of the psychopathology, mental reconstruction, removal of focal infections, etc.

The thyroid problem is not one which concerns the thyroid gland alone, but, as was said in the beginning, represents an algebraic sum, which is never quite the same in any given case, but is made up of many morbid processes, produced by the general maladjustment.

The significance of thyroid enlargement then, in any patient, especially of the hyperthyroid type, is that of the stigma of a constitutional inadequacy. If you search for other stigmata of similar nature in these patients and their families, your efforts will not be in vain.

*G. A. Friedman: A brief discussion of the possible rôle of the thymus in Graves' disease and myxedema, New York Medical record, November 5, 1921, page 806.

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EDITORIAL

A. M. A. Meeting at St. Louis

The registration at the meeting of the American Medical Association in St. Louis, May 22 to 26, was 5,200, only three or four other sessions having had a larger registration. The first day of the House of Delegates was taken up with the addresses of the General Officers and Councils and the presentation of new business in the form of resolutions which were at once referred to the proper Reference Committees for future report and action by the House.

Several resolutions were misunderstood or willfully misused by the Press. One resolution in reference to the Volstead Act was stated to be an attack on said act. The resolution merely asked that the act be so amended that the government would furnish the druggist with sealed bottles in bond from the government distilleries (8 oz., 16 oz. and 32 oz.) so that physicians desiring to prescribe whiskey would be able to get pure goods. This was passed. A resolution condemning the assignment of vocational trainees from disabled soldiers to chiropractic schools also passed. A resolution in memoriam to Dr. J. N. McCormack, of Louisville, one of the reorganizers of the As-

sociation was passed. Also, later, a resolution to place a metal plate in some prominent place in the Association Building in memory of him was passed. A resolution to change the constitution so as to refuse the delegates from the different scientific sections voting privileges in the House of Delegates was presented. Under the rules this had to lay over one year. It was reported adversely by the Reference Committee and will be acted on by the next House. This was the basis for the newspaper report of a "split" in the House of Delegates.

The House of Delegates referred the question of a Legislative Bureau to the Board of Trustees. Such a bureau is being organized with a full-time paid secretary. It will attempt to co-operate with the Legislative Committees of the different states as to all legislation affecting medical men and to furnish information available for every one interested in such legislation. It will also have charge of all national legislative interest. It will undoubtedly give much needed service. There were numerous changes in the Constitution and By-Laws. Anyone interested can get a copy of the constitution by writing the Secretary of the American Medical Association, 535 North Dearborn Street, Chicago.

The social features were numerous. The President's reception was a brilliant affair, very crowded but every one seemed to enjoy it. A large ball followed. The ladies were taken care of in true southern style of hospitality.

Dr. Ray L. Wilbur, president of Stanford University, was elected President. San Francisco was chosen for the meeting place next year. The Trustees have since chosen the time from June 25 to 30, 1923.

A complete copy of the Proceedings of the House of Delegates may be found in the May 27th and June 3rd issues of the Journal of the American Medical Association.

T. McD.

Professor Fuchs

The recent visit of Professor Fuchs to Minnesota under the auspices of the Minnesota Academy of Ophthalmology was a source of great satisfaction to all who had the pleasure of seeing and hearing him. His visit was primarily for the purpose of holding a ten day post-graduate course for two hours each day for the benefit of the local special-

ists. A certain amount of consultation work was referred to him by specialists during his visit. The course consisted of lectures and demonstrations of lantern slides and those who took advantage of this unusual opportunity felt well repaid for time and money spent.

On the subject of pathology of the eye, Fuchs is an authority. Perhaps in no other branch of medicine does the name of one man stand out so pre-eminently as the authoritative source to which all present day investigators and writers must turn. And yet this venerable professor is the embodiment of modesty and simplicity and won all his hearers.

The lectures were accompanied by lantern slide demonstrations of specimens collected over a long and active lifetime. Certainly the unequalled opportunities in Vienna for studies of eye pathology have been carefully utilized to the utmost. The professor had an intimate acquaintance with his slides and lost no time in demonstrating facts with actual specimens.

The reception of Professor Fuchs in Minneapolis is a striking example of how truth in science and art should not and can not be suppressed even by such a catastrophe as the recent World War. Here was one scientific investigator handing on the results of his life work to other seekers after the truth and all else was of no importance.

Carbon-Monoxide Poisoning

There has been a notable disregard by the public in general and garage men in particular of the very grave danger from the inhalation of automobile exhaust fumes. The daily papers repeatedly report fatalities resulting from this sort of poisoning and Surgeon General Cummings of the United States Public Health Service has done a timely service in spreading a warning and information in regard to this form of poisoning which may be not only acute but chronic in character.

Automobile exhausts contain the products of incomplete combustion, most dangerous of which is the carbon-monoxide gas which ordinarily constitutes from five to seven per cent. The amount may increase to thirteen per cent in a badly running motor, and the closed garage, especially where cars are allowed to run continuously (so-called running-in), is likely to become a menace to health

and even life itself. A leaky heating system in a closed car which utilizes the exhaust has been known to cause fatalities.

Furnaces and stoves, through faulty drafts and leaky pipes, may allow the escape of carbon-monoxide, which in itself is odorless and accompanying odorous gases may not be detected, as the olfactory nerves upon repeated stimulation early lose their power to detect faint odors.

The danger lurking in illuminating gas is well known and in fact so well known that going to bed with the gas turned on has acquired some popularity among those suicidally inclined. The danger of accidental poisoning is less insidious, however, because of the accompanying odor of sulphur.

Carbon-monoxide is known to have a combining power with the hemoglobin of the red blood corpuscles some three hundred times that of oxygen. The inhalation of the poisonous gas, therefore, more or less readily replaces the oxygen and if allowed to act long enough results in the destruction of the red cells.

The symptoms of acute and chronic poisoning are largely a matter of degree. In the acute cases the victim may feel sleepy and yawn and there may be a sensation of the skin being tightly drawn across the forehead. Frontal headaches, later becoming occipital in character, may be followed by nausea, rapid pulse and respiration, and unconsciousness. Death may occur from heart failure. In the chronic cases the poisoning may produce a tired feeling, headache, nausea, palpitation, sleeplessness and mental dullness. A certain amount of immunity seems to develop in some cases and doubtless many chronic cases go unrecognized.

Oxygen will replace the combined carbon-monoxide in direct proportion to its concentration. Thus pure oxygen is five times as efficacious as fresh air. The earlier it is administered the less the likelihood of destruction of blood cells and for this reason oxygen should be at hand where there is likelihood of acute poisoning occurring. Artificial respiration may be necessary in extreme cases. Thus the apparatus for combining artificial respiration and oxygen administration is the ideal remedy. The importance of rest following such poisoning in order to minimize the danger of heart failure can not be over-emphasized.

OBITUARY

DR. H. E. CONLEY

Dr. H. E. Conley, a practicing physician in Cannon Falls for 37 years, died at his home there suddenly Saturday, May 27.

Dr. Conley was the son of Lewis and Betsey Hutchins Conley, early Iowa pioneers. He was born at Palo, Iowa, July 11, 1855. Later the family moved to a farm in Mitchell county near Osage, where Dr. Conley grew to manhood.

The study of medicine was taken up in 1881 with his brother, the late Dr. A. T. Conley, who was at that time practicing in Cannon Falls. He attended the full course of medicine at the Iowa Medical College and graduated from that institution in March, 1884. For a short time after graduation he practiced in Waterville but in 1885 he located permanently in Cannon Falls.

While devoting the greater part of his time to his profession Dr. Conley was prominent in political and educational circles of his town. He had acted as mayor and councilman and at the time of his death was president of the board of education.

Dr. Conley was held in high esteem not only by his fellow townsmen but by all who came to know him in a professional as well as a social way. He was known to all for his cheerful and agreeable disposition and for his high ideals.

Dr. James H. Proudlock of Danbury, Wisc., died at St. Luke's Hospital, Duluth, May 25, at the age of 59 years. Dr. Proudlock was a graduate of the College of Physicians and Surgeons, Keokuk, Iowa.

Dr. Elam S. Gibbs, Monticello, Minn., 75 years of age, died May 2. Dr. Gibbs gave up his practice ten years ago owing to illness. He was a graduate of Western Reserve Medical College.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

NORTHERN MINNESOTA MEDICAL ASSOCIATION MEETING

The Northern Minnesota Medical Association held its second annual meeting at Detroit, June 5, 6 and 7 with a large attendance. This society was organized a year ago for the purpose of getting together the physicians of the northern and western parts of the state and their adjacent territory. Members of the society feel that it promises to be one of the large societies of Minnesota.

Features of the meeting included a clinic for children under five years of age, conducted for the Becker County Public Health Association by Dr. H. F. Helmholz of Rochester and Dr. E. K. Huenekens of Minneapolis. A symposium on Tuberculosis in Children was composed of papers by Drs. H. F. Helmholz, Rochester; E. K. Huenekens, Minneapolis; O. W. Rowe, Duluth; M. S. Henderson, Rochester; and E. M. Hammes, St. Paul.

Dr. Paul B. Magnuson of Chicago gave a moving picture demonstration of Bone Surgery followed by discussion by Dr. Henderson, Rochester, and Dr. C. N. Callander, Fargo.

The following papers were read:

Hypertension—Dr. E. L. Gardner, Minneapolis. Discussed by Dr. E. H. Smith, Bemidji, Dr. J. A. Freeborn, Fergus Falls.

Hypertension in Pregnancy—Dr. F. L. Adair, Minneapolis. Discussed by Dr. R. A. Beise, Brainerd, Dr. R. A. Gowdy, Alexandria.

Some Minor Disturbances of the Heart—Dr. Henry L. Ulrich, Minneapolis. Discussed by Dr. O. J. Hagen, Moorhead, Dr. C. F. Ewing, Wheaton.

X-Ray Therapy in Inoperable Malignancies—Dr. C. A. Donaldson, Minneapolis. Discussed by Dr. V. J. La Rose, Bismarck, Dr. Kent E. Darrow, Fargo.

Plastic Surgery of the Face in Civil Practice—Dr. Gordon B. New, Rochester. Discussed by Dr. E. W. Humphrey, Moorhead.

Head Injuries—Dr. F. J. Corbett, Minneapolis. Discussed by Dr. William Ott, Rochester, Dr. O. N. Meland, Warren.

Injuries of the Rectum—Dr. Theodor Bratrud, Warren. Discussed by Dr. H. C. Cooney, Princeton, Dr. B. J. Branton, Willmar.

Antrum Infection in Infancy and Childhood—Dr. Kenneth Phelps, Minneapolis. Discussed by Dr. C. G. Norden, Brainerd, Dr. A. V. Garlock, Bemidji.

Acute Mastoiditis—Dr. Horace Newhart, Minneapolis. Discussed by Dr. Martin R. Rindlaub, Fargo.

Clinics were held by Dr. Nelson M. Percy and Dr. Bertram W. Sippy, both of Chicago. Other clinics were those conducted by Dr. C. N. Hensel, St. Paul, on Asthma and Hay Fever, and a Heart Clinic by Dr. F. J. Hirschboeck.

The following were elected as officers for the coming year: Dr. C. B. Lewis, St. Cloud, Minn., president; Dr. C. N. Callander, Fargo, N. D., vice-president; Dr. W. L. Burnap, Fergus Falls, Minn., secretary-treasurer; Dr. O. N. Meland, Warren, Minn., censor.

The next meeting of the society will be held at Alexandria in June, 1923.

WABASHA COUNTY MEDICAL SOCIETY

The fifty-fourth annual meeting of the Wabasha County Medical Society will be held at Wabasha, Thursday, July 6th. The Society and guests, including the ladies, will be entertained by the Wabasha members and their wives.

Following is the program:

"The Modern Conception of Heart Disease," (President's address)—Dr. Hugo Branyan, Wabasha.

"Myodegeneration and Heart Disease of Later Life"—Dr. George E. Fahr, of the Teaching Department, School of Medicine, University of Minnesota.

"The Heart in Thyroid Toxemia"—Dr. John T. Bowers, Lake City.

"The Functional Heart Tests in Diagnosis and Prognosis"—Dr. D. S. Fleischhauer, Wabasha.

"The Present Status of Digitalis Therapy"—Dr. E. H. Bayley, Lake City.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The midsummer meeting of the S. M. M. A. was held in Rochester, Monday and Tuesday, June 19 and 20, 1922. The long list of notable guests and the unexcelled clinical facilities of the Mayo Clinic contributed much to the success of the meeting. Although the attendance (under 300) did not come up to expectations, the various meetings were, for the most part, run off promptly and the ideal summer weather only added to the enthusiasm of the members.

The members began to arrive Sunday afternoon at the headquarters in the splendid new Kahler Hotel. With the seven new hotels completed within the past five years Rochester does not lack accommodations for meetings of any sort.

Symposia are becoming more and more popular at medical meetings and the one on thyroid diseases, given by members of the Mayo Clinic Monday morning, was both authoritative and interesting.

The poor acoustics of the Methodist church interfered somewhat with the value of the general meeting and it is fortunate that the addresses are to be published in MINNESOTA MEDICINE.

Perhaps we are led to expect too much new food for thought from the celebrities in the profession and therefore their remarks are often disappointing. This was true of this meeting to a certain extent and yet choice morsels were let fall occasionally, which made the meeting fully worth while.

At the evening banquet Dr. C. H. Mayo presided with his usual ease and paid tribute to the valuable services rendered the association by the retiring Secretary General, Dr. A. F. Schmitt. Dr. Fred H. Albee, of New York City, presented some figures in his address following the banquet, which gave some idea of the enormous army of workers that is incapacitated each year through industrial accident and illness and called attention to recent state legislation providing state aid for such unfortunates. He sounded a word of warning to the profession to prepare for the changes in the practice of medicine which are occurring at the present time, and which are demanding of the profession special study in order to be able to render efficient treatment.

No report of the meeting would be complete without calling attention to the unusually elaborate program presented and giving proper credit to the chairman of the program committee, Dr. H. W. Meyerding, of Rochester.

OF GENERAL INTEREST

The Minnesota Neurological Society met in Rochester, Saturday, May 13.

Dr. C. E. Wagner of Duluth recently moved to Morgantown, West Virginia.

Dr. H. H. Holm of Glencoe has filed for the office of coroner of McLeod county.

Dr. C. W. Tinker of Hutchinson recently returned from a winter's visit in California.

Dr. Roger H. Mattson of Minneapolis has begun the practice of medicine at Stephen, Minn.

Dr. and Mrs. W. C. Roberts, of Owatonna, have returned from a month's visit in Lincoln, Nebraska.

Dr. A. V. Denman, Mankato, is in New York taking post-graduate work in Medicine and Surgery.

Dr. H. R. Russell, formerly of Stewartville, has taken up his practice in Cherokee Heights, St. Paul.

Mrs. J. Raiter, mother of Dr. F. W. Raiter, of Cloquet, died a short time ago after a lingering illness.

Dr. S. O. Watkins has returned from Los Angeles, Calif., and will spend the summer at his home in Carlton.

Dr. H. A. Schneider of Jordan spent the month of June in California and other western points of interest.

Dr. H. A. Schneider of Jordan left June 10 for a three weeks' vacation in California and other western points.

Dr. and Mrs. J. L. Lynch and son of Winona recently returned home from a four months' stay in California.

Dr. C. M. Long has returned to his home in Osakis after spending three and a half months in southern California.

Dr. A. H. Kaplan, pathologist of St. John's Hospital, has been appointed as special instructor at Concordia College.

Dr. L. A. Buie was elected Associate Fellow of the American Proctologic Society at the recent meeting in St. Louis.

C. A. Portmann, nephew of Dr. Portmann of Jackson, has filed as candidate for representative from Murray county.

Dr. Alois Mahowald of Albany has located at Prior Lake where he is to continue the practice of the late Dr. E. E. Cannady.

Dr. J. J. Stratte of Minneapolis has given up his practice there and is considering Devils Lake, N. D., as a new location.

Fifteen nurses were graduated from St. John's Hospital, St. Paul, May 25. Exercises were held at St. John's Lutheran church.

Dr. E. R. Leonard, formerly of Everly, Iowa, has located in Lake Park, Iowa, for the practice of medicine and surgery.

Dr. Roy Andrews of Mankato is in Chicago taking a graduate course in pediatrics at Michael Reese Hospital under Dr. Abt.

Dr. and Mrs. E. L. Tuhoy, Duluth, sailed from Montreal May 19 to spend the summer touring the British Isles and the continent.

Announcement has been made of the marriage of Dr. O. J. Seifert and Mrs. Hedwig Henle, which took place in New Ulm May 15.

Dr. D. C. Balfour was elected vice-president of the American Surgical Association at the recent meeting held in Washington, D. C.

Dr. William G. Vandesteeg, formerly of Iowa Falls, Iowa, has moved to Biwabik, where he will be on the staff of the Biwabik hospital.

Dr. E. L. Doolittle has resigned as school physician of the Duluth Public Schools and will devote his entire time to his private practice.

Dr. J. P. Greaves of Sherwood, N. D., spent a week visiting with friends at Duluth while recuperating from an attack of influenza.

At the recent meeting of the Central Neuropsychiatric Association at St. Louis it was voted to hold the next meeting in Rochester, October, 1922.

Dr. E. W. Benham of Mankato, who recently returned

from an extended vacation in Florida, resumed his practice at the Mankato Clinic, June 15.

Dr. W. C. Dieterich of Hanley Falls recently completed a four weeks' course in post-graduate work at the University of Minnesota Medical School.

The Fourth Annual Meeting of the Association of Resident and Ex-Resident Physicians of the Mayo Clinic was held in Rochester May 29 and 30.

Dr. and Mrs. S. J. Kilbride returned to their home in Canby a short time ago from Chicago, where Dr. Kilbride has been taking post-graduate work.

Dr. J. J. Swendson, a graduate of Rush Medical School in 1920, has moved from Appleton, Wis., to St. Paul, where he is associated with the Earl Clinic.

Dr. Thomas Hall Shastid of Duluth received, at the recent commencement of the University of Wisconsin, the honorary degree of Doctor of Science.

Dr. R. E. Farr, of Minneapolis, lectured in the lobby of the Mayo Clinic Thursday, May 11. His topic was "A discussion of the local anesthesia problem."

Dr. B. S. Gardner, of the Mayo Clinic, delivered the annual address to the graduating class of the Dental Department of the University of Minnesota.

Dr. P. C. Bjorneby of Bagley, who recently underwent a major operation at the Abbott hospital in Minneapolis, has been reported as recovering rapidly.

Dr. J. A. Rippert has resigned his position on the medical staff of the Missabe hospital at Proctor and will engage in private practice in West Duluth.

Dr. W. M. Gratiot of Mineral Point, Wisconsin, has sold his practice there to Dr. L. S. Graves of Wilton, Wisconsin. Dr. Gratiot plans to locate in California.

Word has been received of the marriage of Dr. Charles E. Proshek, of New Prague, Minn., to Miss Gabriel Preiss, of Prague, Czecho-Slovakia, at Prague, April 1.

Dr. W. A. Coventry, Potentate of Aad Temple, and Dr. C. L. Haney were among the Duluth delegation who attended the Shrine convention at San Francisco.

Professor Ernst Fuchs, of Vienna, gave a Mayo Foundation lecture at the Mayo Clinic June 9. His subject was, "Syphilis and its relation to diseases of the eye."

Dr. Hugh Reynolds, city health officer of Hibbing, recently completed a motor trip through the southern part of the state. Mrs. Reynolds accompanied the doctor.

Dr. Alfred N. Bessesen, Jr., and his brother, Dr. Daniel H. Bessesen, have entered into partnership with their father, Dr. A. N. Bessesen, at 301 Donaldson Bldg., Minneapolis.

Dr. E. H. Frost of Willmar, who for several weeks has been confined to bed at St. Mary's hospital, Minneapolis, is progressing very satisfactorily according to recent report.

Dr. J. R. Manley, Duluth, and Dr. R. M. Eppard, Cloquet, were speakers on the program of the St. Louis County Medical Society meeting which was held in Duluth last month.

An epidemic of appendicitis recently hit the Physicians and Surgeons Clinic of Duluth, as a result of which Drs. W. R. Bagley and E. Z. Shapiro are convalescing from operations.

A new appointment on the staff of the Minneapolis city hospital is that of Dr. H. P. Bacon of Milaca. Dr. Bacon has taken this position in addition to his duties in the government clinic.

The formal opening of the new Surgical Pavilion at St. Mary's Hospital in Rochester was held under the auspices of the ladies of the Rochester Child's Health Association, Friday, May 12.

At the last meeting of the St. Louis County Medical Society it was decided to hold the next meeting of the society on the Iron Range and to have the Range members give the program.

Dr. I. R. Maercklein, who has been associated for several years with Dr. E. M. Clay of Renville, recently moved to Oakes, N. D., where he and Mrs. Maercklein will make their future home.

Dr. J. N. Perkins has disposed of his medical practice in Sanborn and has removed to Lewiston, Idaho. His practice has been taken over by Dr. H. F. Juergens, formerly of Perham, Minn.

Dr. Wilson has recently been awarded the Distinguished Service Medal for exceptionally meritorious service to the government of the United States in a position of great responsibility during the World War.

Dr. A. J. Chesley, secretary of the State Board of Health, attended the conference which was called in Washington recently by the United States Public Health Service on the Shepherd-Towner maternity act.

Dr. H. Berglund, of the Department of Biochemistry, Harvard Medical School, gave a Mayo Foundation lecture in Rochester, June 1. His topic was, "The chemistry of the nonprotein nitrogen of the blood."

The Mississippi Valley Medical Association will meet in Rochester, October 10 to 12, 1922. Dr. Frank Kidd, of London Hospital, London, England, will present a paper, "The treatment of tumors of the bladder."

Dr. and Mrs. M. F. Eustermann of Rochester recently returned from Cambridge Springs, Pa., where Dr. Eustermann lectured before the Lake Erie District Dental Society on "The Relation of Dentistry to Medicine."

Leo P. Adams, son of Commissioner Julius Adams of St. Cloud has finished his studies at the University of Minnesota Medical School and will become intern at a La Crosse Wis., hospital before entering private practice.

Word has been received of the marriage of Dr. O. C. Strickler of New Ulm and Miss Carrie E. Purdy of Grand Rapids, Mich., which took place in Chicago, May 6. Dr. and Mrs. Strickler are now at home in New Ulm.

Dr. R. E. Farr and Dr. S. R. Maxeiner, who with their associates are now organized as the Surgical Clinic of Minneapolis, moved into their new suite of offices at the corner of Hennepin Avenue and Harmon Place, Minneapolis, July 1.

The West Central Minnesota Medical Society held their mid-year meeting at Ortonville on Big Stone Lake, June 15. Lunch was served at Ortonville, followed by an excursion up the lake to Foster, where the business meeting was held in the afternoon.

Dr. Wallace H. Cole of St. Paul has been selected as chief surgeon for the Shriners Hospital for Crippled Children, which will be located on East River Road, Minneapolis. Dr. Cole will assume his duties as soon as the hospital is completed in the fall.

Dr. C. A. Lester of Winona is confined to his bed with injuries sustained in an automobile accident when the taxi in which he was riding slipped off the road over an eight-

foot embankment recently. No fractures were sustained but he was quite badly bruised.

Dr. W. J. Foche, a graduate of the University of Illinois, has opened an office for general practice at Paynette, Wis. Dr. C. G. Amich, formerly of the University of Nebraska, will spend some time with relatives in Omaha before entering practice.

Dr. Walter H. Rumpf, who graduated from the Minnesota School of Medicine in June, will enter general practice immediately and will be associated with the Faribault Clinic at Faribault, Minn. Dr. Rumpf has completed his internship at the City Hospital in Minneapolis.

Dr. Thomas A. Lowe, Jr., formerly of Pipestone, has become associated with Drs. Leon A. Williams and Henry C. Doms of Slayton as associate physician and surgeon in the Home Hospital of Slayton. Dr. Lowe was associated with his uncle, Dr. Thomas Lowe, Sr., in his practice at Pipestone.

Several former residents of the City and County Hospital of St. Paul have located in Minnesota and neighboring states. Those who will practice in St. Paul are Dr. V. Hansen and Dr. G. Ruhberg. The former will have his office with Dr. F. C. Schuldt, the latter with Dr. Arthur Sweeney.

Dr. A. E. Brown is to affiliate with Dr. W. R. Humphrey of Stillwater. Dr. C. E. Sisler will be associated with Dr. M. H. Hursh of Grand Rapids. Dr. L. C. Bacon, Jr., will take post-graduate work under Dr. G. W. Crile of Cleveland, beginning July 1.

Dr. Robert E. Farr of Minneapolis appeared before the Illinois State Medical Association at their meeting which was held at Chicago in May. At the invitation of Dr. A. A. McArthur of Chicago, Dr. Farr also attended the meeting of the Clinical Surgical Society at Chicago following the state convention.

Dr. Roy F. Raiter, brother of Dr. Franklin Raiter, of Cloquet, who was graduated last month from Northwest Union College in Chicago, will practice at the General Hospital, Cincinnati, Ohio, which is rated as the second largest hospital in the United States. Dr. Raiter goes to Cincinnati as the result of ranking highest in a competitive examination.

Dr. E. S. Mariette, superintendent of Glen Lake Sanatorium, was elected president of the Minnesota Association of Occupational Therapy at the organization meeting of the association at Hopkins last month. Miss Jessie Sauer of St. Paul was named first vice-president. Other officers are: Miss Julia Bradley, Fergus Falls, second vice-president; Miss Gracia Loehl, Glen Lake, secretary-treasurer.

Some criticism was brought to bear at a special meeting of the Watonwan County Medical Society recently on the fact that a member of the Hennepin County Medical Society had been in consultation with an osteopath in St. James. The matter was considered the more seriously owing to the fact that the Watonwan Society expelled one of its members last fall because of his close association with an osteopath.

The Minneapolis Surgical Society has been recently organized with a charter membership of twenty-four members. The conduct will be in the hands of a council of five. Only general surgeons who have fulfilled the minimum requirements of the American College of Surgeons

and who live in Minneapolis are eligible to membership. The first meeting was held on April 17th in the Minneapolis General Hospital under the following officers: R. C. Webb, President; Stanley R. Maxeiner, Vice President; A. A. Zierold, Secretary-Treasurer.

Dr. G. B. New was elected a member of the board of directors and vice-president of the American Laryngological, Rhinological, and Otolological Society at a recent meeting held in Washington, D. C. The next meeting of the middle section of the society will be held in Rochester, February, 1923.

"As assistant to the Director of Laboratories and Infectious Diseases, A. E. F., and by reason of his exceptional organizing and executive ability, he organized most efficiently a pathological service throughout the American Expeditionary Forces in France that was of inestimable value to the medical and surgical services and the knowledge thus made available resulted in the saving of many lives."

Dr. E. C. Hartley has been appointed full-time director of the division of child hygiene by the State Board of Health. Dr. Hartley's former home was in Carver, Minnesota. After graduating from Beloit in 1914 he received his M. D. degree at the University of Minnesota in 1918. Following his discharge from the army he had large administrative duties under the Red Cross in Poland. Of late he has been specializing in obstetrics and children's diseases, which experience has especially well prepared him for his new activities. He is at present with Drs. Polak and Beck at the Long Island Hospital at Brooklyn, New York.

MINNEAPOLIS DAILY CLINICAL BULLETIN

A clinical bulletin, including all hospitals, covering medicine and surgery in all its branches and specialties, is issued each day by the Hennepin County Medical Society for the information of local and visiting physicians.

You may arrange with the Hennepin County Medical Society, Geneva 6846, Donaldson Bldg., 11th Floor, to have these bulletins sent to your office, residence or hotel at a charge of fifteen cents per bulletin. You will be welcome at all of these clinics.

NEW AND NON-OFFICIAL REMEDIES

During April the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

ABBOTT LABORATORIES:

Izal.

Izal Disinfectant Powder

INTRA PRODUCTS CO.:

Ven Sterile Solution Mercury Benzoate 1 C.C.

MERRELL-SOULE CO.:

Powdered Protein Milk-Merrell-Soule.

PARKE, DAVIS & CO.:

Pertussis Vaccine.

Pneumococcus Vaccine (4 Types).

Streptococcus Vaccine Polyvalent (Scarlatina).

Typhoid-Paratyphoid Vaccine (Prophylactic).

SEYDEL MANUFACTURING CO.:
Benzocaine-Seydel.

WINTHROP CHEMICAL CO.:
Iothion.
Iothion Oil.
Sabromin.
Sabromin Tablets, 8 Grains.

Acriflavine-Heyl—Proflavine-Heyl.—These products are now marketed by the National Aniline & Chemical Co. and the Council has continued the acceptance for New and Non-official Remedies under the new firm name.

Ammonium Ichthyolate-Meadows.—An aqueous solution, the important constituents of which are ammonium salts of indefinite, complex, organic acids, partaking of the nature of oxygenated bodies and sulphonates held in colloidal dispersion. It is derived from an oily distillate of a fossiliferous bitumen found in Texas. It is claimed that ammonium ichthyolate-Meadows has the therapeutic properties of ichthyol. (See New and Non-official Remedies, 1921, p. 344.) It is a reddish-brown, viscous fluid, having a faint odor. It is soluble in water and miscible with glycerine and fatty vehicles. Meadows Oil and Chemical Corporation, Durant, N. Y. (Jour. A. M. A., April 1, 1922, p. 967.)

Quinidine—Quinidina.—An alkaloid obtained from the bark of various species of Cinchona. Quinidine acts upon the heart in such a manner as to bring about cessation of fibrillation of the auricles in a certain proportion of instances. It is used to restore the normal rhythm of the heart in cases of auricular fibrillation. The drug is not without unpleasant and even dangerous effects. Cases of sudden death from its use have been reported. Quinidine is generally administered as quinidine sulphate. Two-tenths gm. is given as a preliminary dose. If no untoward effects result, the drug is administered on the following day in doses of from 0.2 to 0.4 gm., from three to five times a day and continued for from one to three days.

Quinidine-P. W. R.—A brand of quinidine-N. N. R. Powers-Weightman-Rosengarten Co., Philadelphia.

Quinidine-N. Y. Q.—A brand of quinidine-N. N. R. New York Quinine and Chemical Works, New York.

Quinidine-M. C. W.—A brand of quinidine-N. N. R. Mallinckrodt Chemical Works, St. Louis.

Quinidine Sulphate—Quinidinae Sulphas.—The sulphate of quinidine. For actions, uses and dosage, see under quinidine. It may be administered in the form of cachets, capsules, pills or tablets.

Quinidine Sulphate-P. W. R.—A brand of quinidine sulphate-N. N. R. Powers-Weightman-Rosengarten Co., Philadelphia.

Quinidine Sulphate-N. Y. Q.—A brand of quinidine-N. N. R. New York Quinine and Chemical Works, New York.

Quinidine Sulphate-M. C. W.—A brand of quinidine sulphate-N. N. R. Mallinckrodt Chemical Works, St. Louis, (Jour. A. M. A., April 8, 1922, p. 1051.)

Benzocaine-Seydel.—A brand of benzocaine-N. N. R.

(See New and Non-official Remedies, 1922, p. 39.) The Seydel Manufacturing Co., Jersey City, N. J.

Ven Sterile Solution Procaine 1 C.C.—Each ampule contains 1 c.c. of a 1 per cent solution of procaine-N. N. R. (See New and Non-official Remedies, 1922, p. 35.) Intra Products Co., Denver, Colo. (Jour. A. M. A., April 22, 1922, p. 1201.)

Ven Sterile Solution Mercury Benzoate 1 C.C.—Each c.c. contains mercuric benzoate, 0.02 gm. ($\frac{1}{2}$ Grain). (See New and Non-official Remedies, 1922, p. 192.) Intra Products Co., Denver, Colo.

Tablets of Mercurochrome-220 Soluble.—Each contains 4.6 grains. (See New and Non-official Remedies, 1922, p. 187.) (Jour. A. M. A., April 29, 1922, p. 1296.)

Sterile Suspension Mercury Salicylate in Cacao Butter 1 C.C.—Each c.c. contains .097 gm. ($1\frac{1}{2}$ grains) of mercuric salicylate. (See New and Non-official Remedies, 1922, p. 193.) Intra Products Co., Denver, Colo.

Sterile Suspension Mercury Salicylate in Olive Oil 1 C.C.—Each c.c. contains 0.097 gm. ($1\frac{1}{2}$ grains) of mercuric salicylate (See New and Non-official Remedies, 1922, p. 193.) Intra Products Co., Denver, Colo. (Jour. A. M. A., April 29, 1922, p. 1296.)

PROPAGANDA FOR REFORM.

"Premedicated" Alcohol.—A petition to permit the use of so-called "premedicated" alcohol in remedies for internal use has recently been placed before the Secretary of the Treasury and the prohibition officials. According to drug journals, such a petition was presented by the Council for the Proprietary Association—the organization of the "patent medicine" interests—and also by the Chattanooga Medicine Company—the makers of "Wine of Cardui." When thus medicated, the alcohol is to be tax free. This proposition contains dangers to medicine and to pharmacy in that it may render scientific control of such medicaments difficult. (Jour. A. M. A., April 1, 1922, p. 970.)

Nephritin, Peptenzyme, Trophonine and Pancrobilin.—Sometimes the results of the application of the esthetic arts to commercial interests is incongruous. A house organ uses the names of famous writers, presumably to attract attention. Thus: It is suggested that if the physicians to Montaigne, who died of nephritis, had known of "Nephritin" they would have been able to furnish him with "substantial constructive help"—a statement which may be more readily accepted by literateurs than by pathologists. Since all of us cannot live the simple life recommended by Joaquin Miller, as a means of avoiding indigestion, it is inferred that we must depend on Peptenzyme. It is related that Thomas Hood passed away in spite of soups and other nourishing food prepared for him by his wife. "Therefore," says the advertiser, "use Trophonine and live." "Like Victor Hugo," proclaims the advertiser, "millions today are eating the unknown and are paying the toll in constipation." He further asserts, "From whatever cause it originates . . . Pancrobilin is always indicated." Alas, Nephritin, Peptenzyme, Trophonine and Pan-

crobinil cannot avail Montaigne, Miller, Hood or Hugo now. (Jour. A. M. A., April 1, 1922, p. 971.)

Leaven's Asthma Prescription.—This is put on the market by the Leavenwood Drug Co., Rosedale, Kansas. The A. M. A. Chemical Laboratory reports that the composition of this preparation is essentially: Potassium iodide. 10.9 gm., sugar (sucrose) 55.0 gm., iron, a trace, water, flavoring and coloring matter to make 100 c.c. (Jour. A. M. A., April 1, 1922, p. 991.)

Eksip.—This is a mail-order "cure" for diabetes, marketed by Matthew Richartz with the slogan, "No more dieting! No more starving! 'Eat and get well.'" Eksip is sold in the form of tablets at 6.00 for 200. The A. M. A. Chemical Laboratory reports that the bulk of the tablets consisted of magnesium carbonate and starch. A small quantity of an unidentified drug was found. Alkaloid heavy metals and emodin-bearing drugs were absent. (Jour. A. M. A., April 1, 1922, p. 991.)

"Proprietary Preparations in Poland."—The influence of the work of the American Medical Association—through its Council on Pharmacy and Chemistry and The Journal's Propaganda for Reform in Proprietary Medicines—in protecting the public, both directly and indirectly, against the nostrum evil, extends year by year. Especially, is it noticeable when new legislation is created. Recently, the new Polish state introduced regulations governing the manufacture and sale of proprietary remedies. These regulations reflect the change in attitude that has taken place in the public mind in all civilized communities toward the responsibility of those who would make and sell preparations of the home remedy type. The Polish regulations have much in common with recent Austrian and Spanish legislation on proprietary medicines, and the influence of the English Proprietary Medicines Bill is apparent in the prohibition of the use of testimonials. While no quantitative disclosure on the label of the composition of the preparation is required, except in the case of potent drugs, the fullest details are demanded from the manufacturer, this information to be of such a nature as will enable the State Pharmaceutical Institute to prepare the preparation for the purpose of verifying the manufacturer's statements. The obligation of the manufacturer to keep a record not only of his production, but of all his supplies to wholesalers, is also a new feature. (Jour. A. M. A., April 8, 1922, p. 1071.)

Yeast Foam Tablets.—Shorn of verbiage, "Yeast Foam Tablets" are claimed to be dried yeast in the form of tablets. They are put up in typical "patent medicine" style. The advertising for these tablets would lead the public to believe that it is in imminent danger of suffering from an inadequate supply of vitamin B. Though the Yeast Foam propaganda is plainly addressed to the public, specimen packages have been sent to physicians. Thus, the profession is given once more the opportunity to act as an unpaid peddler. (Jour. A. M. A., April 8, 1922, p. 1074.)

Hormotone.—This is a "pluriglandular tonic for asthenic conditions," sold by the G. W. Carnick Co. in the form of tablets for oral administration. Each tablet is said to contain 1/10 grain of desiccated thyroid, 1/10 grain of entire-pituitary, together with the hormones of the ovary and testes—the amount and the form in which the latter are

supposed to be present are not given. The Council on Pharmacy and Chemistry refused to accept Hormotone for New and Non-official Remedies. (Jour. A. M. A., April 8, 1922, p. 1074.)

Queen of Antiseptics.—This preparation is marketed by a person in Aurora, Illinois, calling herself "Mme. Leonard." It is claimed to be "A Perfect Vaginal Germ Destroying Powder and Applicator." The A. M. A. Chemical Laboratory reports that the preparation is composed essentially of boric acid, 97 per cent, and ammoniated mercury, 3 per cent. (Jour. A. M. A., April 8, 1922, p. 1072.)

Yeast Preparations and Vitamin B Concentrates.—The Council on Pharmacy and Chemistry has adopted the following principles as a guide in the consideration of yeast preparations and vitamin B concentrates for New and Non-official Remedies: 1. The claim that deficiency of vitamin B and diseases resulting therefrom are common conditions in the United States is not at this time warranted. 2. The claim that yeast preparations or extracts are, in principle or in general, essentially more effective or more practical or a more available means of administering vitamins than the commonly available vitamin-containing foods is not at this time supported by adequate acceptable evidence. 3. The claim that therapy with yeast or yeast preparations has as yet more than an experimental status is not at this time supported by adequate acceptable evidence. (Jour. A. M. A., April 15, 1922, p. 1146.)

During May the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

G. W. CARNICK CO.:

Epinephrine-G. W. C. Co.

Epinephrine Chlorid solution-G. W. C. Co.

INTRA PRODUCTS CO.:

Phenolsulphonephthalein-Ipco.

Vensterile Solution Phenolsulphonephthalein, 1 c.c.

LEDERLE ANTITOXIN LABORATORIES:

Pollen Diagnostics-Lederle.

H. K. MULFORD CO.:

Diphtheria Toxin-Antitoxin Mixture-Mulford.

NATIONAL ANILINE AND CHEMICAL WORKS:

Neutral Acriflavine-Heyl.

Tablets Neutral Acriflavine-Heyl, 0.1 gm. (1½ grs.)

Neutral Acriflavine-Heyl Throat Tablets.

Neutral Acriflavine-Heyl "Pro Injectione," 0.5 gm. vials.

Neutral Acriflavine-Heyl "Pro Injectione," 1.0 gm. vials.

WINTHROP CHEMICAL CO.:

Luminal Tablets, ¼ grain.

Izal.—An albuminous emulsion containing not less than 50 per cent of "izal oil," obtained in the destruction of bituminous coal, and consists essentially of monatomic phenols boiling between 205 and 300 C. Izal is practically free from phenol and cresols. Izal is a germicide and disinfectant. The germicidal efficiency is claimed to be twelve times as great as that of any equal quantity of phenol, but it is stated to be less toxic than phenol. The Abbott Laboratories, Chicago.

Izal Disinfectant Powder.—Izal oil, 10 per cent; naph-

thalene, 5 per cent; inert, absorbent earth, 85 per cent. The Abbott Laboratories, Chicago.

Powdered Protein Milk—Merrell-Soule—Dry Protein Milk.—A modified milk preparation having a relatively high protein content and a relatively low carbohydrate content. Each 100 gm. contains approximately: Protein, 38 gm.; butterfat, 27 gm.; free lactic acid, 3 gm.; lactose, 24 gm., and ash, 5 gm. Powdered protein milk is said to be useful for correcting intestinal disorders of infants and children. For the majority of conditions, powdered protein milk should be administered in small quantities, according to the age and condition of the patient, after a period of starvation of from twelve to forty-eight hours. Merrell-Soule Sales Corp., Syracuse, N. Y.

Sabromin—Calbromen—Calcium Dibromobenate.—Sabromin contains not less than 28.5 per cent of bromine. Sabromin is not adapted to conditions in which a rapid saturation of the system with bromine is required. It is indicated in conditions in which the bromides cannot be administered for continued periods without gastric disturbance or in which brominism is caused readily. It is claimed that sabromin is of value in conditions in which a mild sedative action is desired, particularly in conditions requiring prolonged administration. Dosage: From 0.3 to 1.2 gm. Winthrop Chemical Co., Inc., New York. (Jour. A. M. A., May 6, 1922, p. 1389.) Sabromin tablets, 8 grains. Winthrop Chemical Company, Inc. (Jour. A. M. A., May 6, 1922, p. 1389.)

Iothion—Iopropane—Di-Iodo-Hydrox-Propane.—Iothion contains from 77 to 80 per cent of iodine. It is used when it is desired to obtain the systemic effect of iodides by external application. Iothion is used in the form of iothion oil, in solution in alcohol or glycerine, or in the form of ointments containing from 5 to 20 per cent of iothion. Winthrop Chemical Company, Inc., New York. (Jour. A. M. A., May 13, 1922, p. 1459.)

Iothion Oil.—Iothion, 10 parts; chloroform, 10 parts; olive oil, 80 parts. Winthrop Chemical Company, Inc., New York. (Jour. A. M. A., May 13, 1922, p. 1459.)

Typhoid-Paratyphoid Vaccine (Prophylactic) (See New and Non-official Remedies, 1922, p. 310).—A typhoid vaccine marketed in packages of three 1 c.c. bulbs, the first dose containing 500 million killed typhoid bacteria, 375 million killed paratyphoid A and 375 million killed paratyphoid B bacteria; the second and third doses each containing 1,000 million killed typhoid bacteria, 750 million killed paratyphoid B bacteria respectively. Parke, Davis & Co., Detroit, Mich.

Pneumococcus Vaccine (4 Types) (See New and Non-official Remedies, 1922, p. 304).—A suspension of pneumococci, Types I, II, III and Group IV, in equal proportions, in physiological solution of sodium chloride, preserved with cresol, 0.3 per cent. Each cubic centimeter contains 3,000 million killed bacteria. Marketed in packages of four 1 c.c. bulbs; four 1 c.c. syringes; 5 c.c. vials and 20 c.c. vials, respectively. Parke, Davis & Co., Detroit, Mich.

Streptococcus Vaccine Polyvalent (Scarlatina).—A streptococcus vaccine (See New and Non-official Remedies, 1922, p. 308), marketed in packages of four 1 c.c. bulbs, each cubic centimeter containing 1,000 million killed streptococci isolated from scarlatina cases; also marketed in

packages of 4 c.c. syringes, in 5 c.c. vials and in 20 c.c. vials. Parke, Davis & Co., Detroit, Mich.

Pertussis Vaccine.—A pertussis bacillus vaccine (See New and Non-official Remedies, 1922, p. 303), marketed in packages of four 1 c.c. bulbs, each cubic centimeter containing 4,000 million killed pertussis bacilli (Bordet); also marketed in packages of four 1 c.c. syringes, in 5 c.c. vials and 20 c.c. vials. Parke, Davis & Co., Detroit, Mich. (Jour. A. M. A., May 13, 1922, p. 1459.)

Diphtheria Toxin-Antitoxin Mixture—Mulford.—Each c.c. of this mixture (See New and Non-official Remedies, 1922, p. 282) constitutes a single dose containing three lethal doses of toxin and 3.5 units of antitoxin. It is marketed in packages of three 1 c.c. vials; in packages of thirty 1 c.c. vials, and in packages of one 10 c.c. vial. H. K. Mulford Co., Philadelphia.

Phenolsulphonephthalein-Ipco.—A brand of phenolsulphonephthalein-N. N. R. (See New and Non-official Remedies, 1922, p. 222.) It is marketed in the form of Vensterile solution phenolsulphonephthalein, 1 c.c. representing phenolsulphonephthalein-Ipco 0.006 gm. in the form of the monosodium salt. Intra Products Co., Denver. (Jour. A. M. A., May 23, 1922, p. 1612.)

PROPAGANDA FOR REFORM

MORE MISBRANDED NOSTRUMS.—The following products have been the subject of prosecution by the Federal authorities charged with the enforcement of the Food and Drugs Act:

Iron Elixir (Charles S. Miller), a dilute watery solution of sodium citrate and iron chlorid, with a slight trace of alcohol, sold as a cure for pimples and boils and as a blood purifier.

Vegetable Regulator (Charles S. Miller), an alkaline watery solution containing aloe and baking soda, claimed to be a remedy and cure for diseases of the liver, diseases pertaining to the stomach and bowels.

Diuretine (East India Medicine Co.), consisting of potassium acetate, buchu extract, a laxative plant drug, oil of juniper berries, sugar, alcohol and water and represented as a cure for Bright's disease and other conditions.

Bloodzone (East India Medicine Co.), consisting of extractives of plant drugs, including a laxative drug, sugar, alcohol and water and represented as a cure for syphilis, cancer, rheumatism, catarrh, boils, psoriasis, pimples and many other conditions.

Grantillas (Eneglotaria Medicine Co.), containing emodin-bearing plant extractives and cramp bark and claimed to be "the best existing uterine tonic," a first class general tonic in anemia and chlorosis and a cure for "Hysteria."

Winslow's Sarsaparilla Compound (Howard Drug and Medicine Co.), consisting essentially of extract of plant material, including sarsaparilla, potassium iodid, glycerin, alcohol and water and claimed to be a reliable remedy for scrofula, chronic ulcers, syphilitic affections, etc. (Jour. A. M. A., May 6, 1922, p. 1407.)

MORE MISBRANDED NOSTRUMS.—The following products have been the subject of prosecution by the Federal authorities charged with the enforcement of the Food and Drugs Act, chiefly because the therapeutic claims made for them were unwarranted:

Compound Fluid Balmwort (The Blackburn Products

Co.), consisting essentially of plant extractives, including bear-berry, a large proportion of sodium acetate, alcohol and water.

Whitlock's Child's Laxative, Cough Sirup, Cathartic Sirup, Nerve Pills, Blood Pills, Female Cordial, Kidney and Gravel Medicine, Red Indian Liniment, Worm Cordial, Nerve Pills, Rheumatic Pills, Kidney Pills (Whitlock Herb Medicine Co.). (Jour. A. M. A., May 20, 1922, p. 1556.)

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of April 19, 1922

DR. ARCH A. WILCOX presented the following case:

Mrs. C. O., married, age 55 years, first seen December 29, 1921.

Family history: Negative.

Past history: In bed six weeks with "pericarditis"—had chills and fever. Pleurisy, chest aspirated, 30 years ago. Constipated for years.

Present complaint: Pain in abdomen, vomiting, distention, bloody vaginal discharge, loss of weight and inability to get bowel movement.

Onset and course: Has been passing through the menopause during the last year. Did not flow for 3 or 4 months, then in April, 1921, began to have bloody discharge from vagina with clots for 3 to 5 days. Then passed no blood for about 3 months. Ever since this she has been unable to retain any solid food and was afraid to eat, as she might vomit immediately or perhaps an hour later. Has been under another doctor's care and was told she had a tumor of the womb. Was given 8 or 10 vaginal radium treatments. Loss of weight and strength has continued. Pain in left side all summer.

Christmas Eve, was awakened by severe pain in right side of abdomen, vomited immediately and vomiting has continued the past three days, occurring frequently. Vomitus is pale, much mucus, no blood or fecal material. No bowel movement for three days until today—slight fecal material (without enema). No blood noted in stools. Pain is located in right lower quadrant extending towards navel; is dull and heavy in character and present continuously. At times more severe than at other times. Vomiting relieved pain slightly. Distention of abdomen not marked. Frequent urination since April, 1921; 4 or 5 times at night; some urgency. No dysuria or incontinence. Urine appears cloudy and analysis during the summer showed albumen and pus. No blood noted. Some edema of feet following an eruption several weeks ago on legs and arms. Thinks she had no fever.

Examination: Poorly nourished. Does not appear acutely ill. Temperature 98.6; pulse 88. Eyes, ears, nose and throat negative. Also neck, chest and lungs. Heart shows slight roughening at first tone at apex.

Abdomen: There is a mass in region of right kidney extending anteriorly, which is firm, moves with respiration, moderately tender, no fluid, rigidity or other abnormalities noted. Bowel seems to be in front of mass.

Vaginal: Urethra appears normal; cervix multiparous, body very small, retroverted. Adnexa not palpated.

Extremities covered with papules whose tops are scratched off. Knee jerks plus.

Sent to St. Mary's hospital Dec. 29, 1921. On December 30, w. b. c. 14,000. Catheterized specimen of urine loaded with pus.

January 9, 1922, first pyelogram showed twisted ureter and a floating kidney with hydronephrosis. Ureter dilated about twice its normal width.

Diagnosis: Hydronephrosis of right kidney—cause undetermined. Left kidney could not be distended with sodium bromide solution at this time.

Cystoscopy same date by Dr. G. Thomas showed much pus in urine. Bladder appeared quite normal. Right ureteral orifice appeared normal and left was gaping, reddened and pus could be seen oozing from it, especially when left loin was squeezed. Specimens collected from the ureters showed:

Right: Urine clear—no pus, t. b. bacilli or other bacteria found.

Left: Much pus, urine cloudy; no t. b. bacilli or other bacteria found after careful search. Indigo carmine injected intravenously appeared through the right ureter in 3½ minutes and none came through the left in 20 minutes. Pyelograms showed shadow having appearance of polycystic kidney. Cystoscopy indicated a dead left kidney. Before operation gastro-intestinal tract x-rayed and found to be normal.

Operation: On January 22, 1922, under local anesthesia left kidney was removed. It was found to be large, very adherent, and some difficulty was experienced in its removal until the capsule was opened and kidney removed and capsule then removed.

Following this operation the patient did very well. Had no nausea or vomiting and on February 18, 1922, the right kidney was fastened in place by splitting the capsule and attaching it with silkworm sutures, which were later removed. The incision on the right side healed by first intention, and left side did almost exactly the same. There was, however, a small sinus which persisted and is still present. Recovery from both operations uneventful.

March 6, 1922, patient up and around and is gaining in strength. Leaving hospital. A specimen of urine examined since patient went home showed t. b. bacilli present.

DR. A. E. BENJAMIN presented a case of osteomyelitis with x-ray films.

B. B., age 13, F., student.

Complaint: Osteomyelitis of tibia and first metatarsal bone.

Family history: Negative.

Personal history: Has had tonsillitis several times. Lungs and heart negative. Appetite and bowels good as a rule. Kidneys negative. Taken sick January 4th with tonsillitis; in bed with high temperature. Feet and legs became swollen and very painful. Diagnosis by attending physician "inflammatory rheumatism." About February 25th, right leg was lanced superficially at the junction of the middle and lower third. Left foot broke open later and discharged pus. In bed since January 4th. Was called in consultation March 15th.

Physical examination: Tonsils large but not submerged. Discharging sinus from dorsal and inner side of left foot and discharging sinus from lower anterior surface of right

leg with considerable swelling. Urine normal. White count 18,000.

X-ray: Anterior, posterior and lateral plates made of left foot and right leg. Shows osteomyelitis involving lower one-third of the right tibia. There is a marked periosteal proliferation. Several small sequestra. Destruction with abscess formation. Osteomyelitis involving first metatarsal of left foot. Involvement of shaft is near proximal epiphysis. Marked periosteal proliferation of entire shaft.

Diagnosis: Osteomyelitis.

Operation: March 17th, sinus in 1st metatarsal in left foot, curetted, carbolyzed and packed with iodoform gauze. Two-inch incision over anterior surface of tibia in right leg and five-inch incision over medial surface of tibia. Small portion of bone chiseled out and sequestra removed. Cavity curetted and packed with iodoform gauze. Left hospital April 13th.

Specimen: No evidence of t. b. found.

Comment:

1. Evidently osteomyelitis resulting from focal infection.
2. Occurred in more than one bone at same time.
3. Diagnosed "rheumatism" by attending physician.
4. Considered simple abscess later.
5. Destruction of bone very rapid.
6. Cavity and dead bone thoroughly removed and infection destroyed. Iodoform packing with no resulting discharge, since operation, excepting serum.
7. Temperature normal; also pulse.
8. Most of gauze left in cavity until April 11th, as it did not separate from bone until that time. Bismuth paste used as filling afterwards.

Results: Healing perfect in left foot at present time. Right leg rapidly healing and promises good results.

Dr. W. A. DENNIS reported a case of dermoid cyst of the pancreas.

The patient is a man, married, 38 years of age, driver of a delivery wagon. He had been under treatment elsewhere for two years for rheumatism and for sacro-iliac disease because of pain in the right costo-lumbar region. He had had scarlet fever, diphtheria, and some decayed teeth. At the time he consulted us he complained only of an indefinite discomfort in the right costo-lumbar region.

Examination revealed a mass, mostly on the right side, below the liver, and in intimate relation with it. It was about 15 cm. in length and 10 or 12 in breadth. It did not move with respiration and was only slightly sensitive to pressure. This was the only pathology found. Urine was normal, blood pressure normal, and Wassermann negative.

The diagnosis took into consideration a tumor of the kidney, echinococcus cyst of the liver, and a tumor of retroperitoneal origin. The accompanying x-ray shows very definitely the outlines and size of the tumor, and fluoroscopic examination indicated that the course of the duodenum was in front of the mass. This, together with the pyelogram showing a normal right kidney pelvis, probably should have definitely fixed the diagnosis as a tumor of retroperitoneal origin.

Incision was made in the midline from the ensiform to the umbilicus. The tumor mass was found to lie behind the stomach and duodenum and was explored through an opening in the gastrohepatic omentum. It was not exposed

until the posterior peritoneum had been incised, when pancreatic tissue was disclosed. The mass was explored also from the outer side of the duodenum and from beneath the upturned colon. In both localities the same pancreatic tissue was to be seen, and since neither offered as great accessibility as the opening through the gastrohepatic omentum this route was chosen and the posterior peritoneum sutured to the parietal peritoneum. The pancreatic tissue was then incised and found to be about $\frac{1}{4}$ inch in thickness. This disclosed a cyst wall of some consistency. On account of the relations enucleation appeared to be out of the question. The cyst evidently arose from the pancreas. Its posterior wall rested upon the aorta and vena cava, its left margin on the common duct and portal vein, and its anterior surface displaced to the right and forward the superior mesenteric vessels. The wall was therefore opened and its contents found to consist of the grumous, greasy, putty-like constituents of a dermoid cyst. A number of short hairs were found in the contents. The sac was emptied so far as possible and a large rubber tube was inserted. The operation was done on the 16th of February and the sac is still discharging, although considerably reduced in size, as the accompanying x-ray shows. The irritation of the skin of the abdomen is that characteristically produced by the pancreatic ferments. The man's general condition is very good and he has an enormous appetite, although for several weeks after the operation he lost weight.

So far as I have been able to discover, only one other case of dermoid cyst of the pancreas has been reported and this by Dr. Judd of Rochester. In his case the tumor was in the tail of the pancreas and could not be removed in its entirety without opening. The ordinary cyst of the

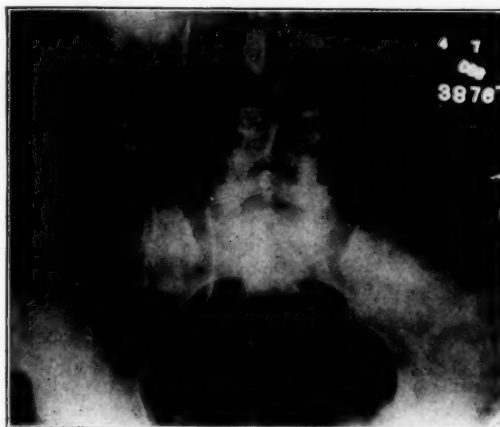


Fig. 1. A387672. Outline of one dilated ureter and the lead catheter in the other are seen in close proximity in lower portion.

pancreas eventually recovers with simple drainage, but whether a dermoid cyst will close with simple drainage remains to be seen. We are endeavoring to destroy the lining membrane of the cyst wall by occasional irrigation with Zenker's fluid. The discharge of late is greatly decreased in amount and is decidedly more serous in character so the outlook appears hopeful.

DR. W. F. BRAASCH, of Rochester, reported the following cases:

CASE 1. Duplication of the renal pelvis and ureter. A387672. Mr. C. F. P., aged 28 years, came to the Mayo Clinic March 29, 1922, complaining of pain referred to the area of the bladder and the right loin, pyuria, and urinary frequency. The symptoms had appeared seven years before with chills and fever, pyuria and urethritis.

Physical examination was practically negative. The specific gravity of the urine was 1.020; it contained a trace of albumin, and 60 pus cells to a field. Culture of the urine revealed colon bacilli. Smears from the prostatic and urethral secretions were negative for gonococci. Rectal examination revealed slight chronic prostatitis. The blood urea was 36 mg. for each 100 c.c. of blood. Roentgenograms of the urinary tract and the Wassermann test on the blood were negative. Cystoscopic examination revealed a moderate degree of diffuse cystitis. The left ureteral orifice was normal. Two orifices less than 1 cm. apart were found on the right side of the trigone. The median or lower orifice was normal; the lateral was dilated, being fully 1 cm. in diameter. (Fig. 1.) Turbid urine exuded on pressure. Catheters were introduced into both ureters to a normal length. The pyelogram revealed definite duplication of the pelvis—the upper normal although small; the lower irregularly dilated. (Fig 2.) The catheterized urine from the upper pelvis was normal; that from the lower pelvis contained many pus cells. The differential phenolsulphonaphthalein test showed, in 15 minutes, on the right side a 10 per cent return of the dye from the upper pelvis and only a trace from the lower; and on the left side, a 15 per cent return in 15 minutes.

Diagnosis was made of complete duplication of the right renal pelvis and ureter, with infected hydronephrosis and atrophy of the lower segment, and normal upper segment. Exploration was advised with a view to heminephrectomy if possible.

At operation the diagnosis was corroborated. The entire



Fig. 2. A387672. Complete duplication of pelvis and ureter. Note close proximity of the two pelvis. Moderate dilatation of the lower pelvis.

kidney, however, was smaller than normal. There was no evidence of external demarcation of the two segments. For a distance of about 10 cm. above the bladder the two ureters were intimately related and covered by a common sheath. (Fig. 3.) It was impossible to separate them, and so it was necessary to perform a complete nephro-ureterectomy. After removal, the two ureters were found to be so adherent that it was impossible to dissect them apart without opening them. On section of the kidney the two pelvis were found to be so closely adjacent that heminephrectomy would have been difficult.

CASE 2. Papillary epithelioma of the renal pelvis. A 383327. Mr. H. M. H., aged 48 years, came to the Clinic February 6, 1922, complaining of painless hematuria of one year's duration. He had had malaria in 1890,

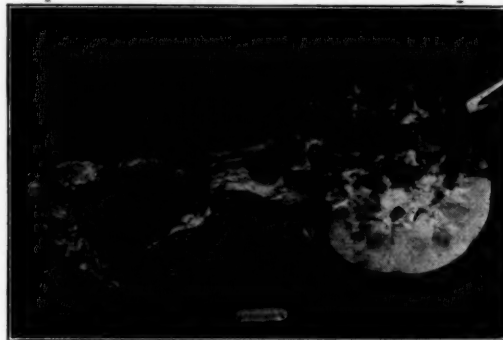


Fig. 3. A387672. Complete duplication of ureter; lower portion of ureters in common sheath which could not be divided without opening either ureter.

pneumonia with influenza in 1918, gonorrhea at twenty-four and again at twenty-eight years. After receiving a hard push in the back the patient had had rather sharp pain in the right loin for two or three days. He then first noticed blood in his urine, and it has since been practically constantly present. He had not had colic, and had not suffered from frequency or dysuria. Loss of weight was not noticed, but for three weeks before examination he had not worked because of progressive weakness. Cystoscopy had been done elsewhere one year before and a cauliflower growth in the bladder and right renal hematuria were found. The vesical tumor was cauterized with "acid" without benefit. Cystoscopy had been done many times in the past four months by various physicians. The tumor was again cauterized and silver nitrate injected into the right renal pelvis without benefit. When nephrectomy was advised the patient came to the Clinic.

Physical examination revealed marked pallor of the skin and nails. On rectal examination, slight enlargement of the prostate was noted with a questionable induration of the posterior wall of the bladder above the gland. The systolic blood pressure was 145, and the diastolic 80. Temperature and pulse were normal. The urine contained gross blood. The combined functional test of the kidneys was 60 per cent return in 2 hours and 15 minutes; the blood urea was 34 mg. for each 100 c.c. of blood. The hemoglobin was 50 per cent, the erythrocytes numbered 3,750,000 and leucocytes 71,000. The Wassermann reaction on the blood was negative. Roentgenograms of the kidney,

ureter and bladder revealed a few small phleboliths on the left. The teeth were infected, and the tonsils enlarged and probably infected. Cystoscopic examination revealed a single papilloma 2 cm. in diameter in the wall of the bladder 3 cm. from the left ureteral orifice and 5 cm. from the internal urethral sphincter. Urine did not spurt from the right ureteral orifice during five minutes of observation; it came normally from the left. A pyelogram of the right kidney and ureter did not show evidence of bromid in the renal pelvis; the ureteric outline was normal.

A diagnosis was made of papillary epithelioma of the right renal pelvis with temporary occlusion, and secondary papillomatous metastasis in the bladder. Nephrectomy and ureterectomy were recommended with fulguration of the vesical tumor.

At operation the kidney was found to be about four times normal size, and contained a malignant papillomatous

studded with these papillomas. After a while we had to remove the bladder together with the prostate in order to get rid of what was evidently then a carcinoma.

One case I saw that was papilloma of the pelvis of the kidney. It was about the size of a walnut and that patient later on had a recurrence lower down and died. It is very important that the whole ureter as well as the kidney be removed.

DR. W. H. CONDIT: This subject is very interesting to me as I have a patient now under observation who has bilateral cystic kidneys. It seems that the incident of this anomaly is increasing—perhaps it is only the discovery of the true incident by our improved methods of diagnosis.

My patient is twenty-eight years of age. She had a pregnancy nine years ago—the baby was born well, but died very young of pneumonia. Eight years ago she consulted a physician for nervousness and albumin was discovered in the urine in large quantities. This she has cared for and watched ever since. She became pregnant again and was delivered of a nine-pound baby nineteen months ago. During the whole ante-partum period she lived practically upon buttermilk. There were twenty-four urinalyses made, with albumin ranging from plus one to plus three. Her blood pressure never rose above 150. Since the delivery of this baby, she has been very careful of her diet and has been in good health.

Two months ago the patient consulted me complaining of extreme pain in the left side with amenorrhea. I found that she was three months pregnant. Cystoscopic examination revealed a double ureter on the left side, each with its individual pelvis. The right kidney and ureter were greatly dilated, the ureter being six or seven times the lumen capacity of the two on the left side. She had plus four albumin, with a history of three repeated attacks of pyelitis in the last five months—one of them, with a temperature as high as 104, being confined to bed with this attack two weeks.

The marvelous thing about these cases is the way in which nature in some way compensates for the absence of the normal kidney tissues and permits fairly good health in spite of adverse circumstances, such as intervening pregnancies.

The question at issue was whether the extreme dilatation of the right ureter was the result of the pressure of the two pregnancies, or whether it is part of the congenital deformity. We are debating now whether or not to empty the uterus and relieve her of the gravity attending another pregnancy.

DR. A. R. COLVIN showed a specimen, in case of prostatic hypertrophy.

This patient had urinary retention. I catheterized him for a few days and his retention ceased. That was thirteen months ago and during that thirteen months he has had absolutely no symptoms. Did not have to get up once in the night. Thirteen months later, however, he gets another attack of retention and after catheterizing him again for three or four days he was able to void again. This is the size of the prostate on removal.

DR. R. E. FARR gave a lantern slide and motion picture demonstration of Practical Local Anesthesia Technic.

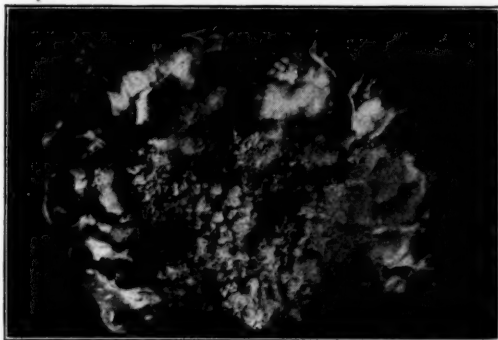


Fig. 4. A383327. Papillomatous tumor almost filling the dilated renal pelvis.

mass. The posterior half of the ureter was removed by cautery. The remainder of the ureter, which was ligated and dropped back, will be removed at a secondary operation through an anterior incision.

The pathologic report was papillary epithelioma of the renal pelvis. The specimen was quite typical. (Fig. 4.) The large papillary mass covering a comparatively small pedicle almost filled the dilated pelvis.

Papillary epitheliomas of the renal pelvis are found much more often in recent years because they are recognized clinically as well as at the operating table. The diagnosis is apparent, providing there is either hematuria or diminution in function from one kidney in the presence of a papillomatous tumor in the bladder. Occasionally, there is also a tumor protruding from the orifice of the affected ureter. Evidence of hydronephrosis as the result of tumor obstruction is often found. In every case of hematuria the possibility of papillary epithelioma must be considered. Complete ureterectomy is necessary in all these cases, since metastasis usually occurs in various portions of the ureter as well as in the bladder. Metastatic growths in the bladder are usually multiple, and have a particular tendency to recur repeatedly following removal.

Discussion by DR. A. SCHWYZER: I remember one case where I had removed what I thought a very harmless papilloma of the bladder. I was away for a while and Dr. MacLaren afterward saw the same case. The bladder was

DR. J. G. Cross gave the following case report at the May meeting.

This patient was a girl 14 years of age, weighed 89 pounds, former weight 97 pounds. Was first seen March 18th. She was taken sick in April, 1921, with what seemed to be an acute enteritis. The stools soon changed to those characteristic of colitis within the first three weeks. Since that time she has passed mucous stools tinged with blood nearly all the time. She had not been under treatment by a local physician until just before I saw her. There was an afternoon temperature of septic type. Physical examination showed simply an emaciated frame with no signs of tuberculosis in the lungs, glands or abdomen. She would not admit tenderness nor pain, her only complaint being of weakness and tenesmus.

Proctoscopic and digital examination of the bowels showed a thickened condition of the rectum, the walls of which were grayish and soft. There was no mass recognized. Examination of smears from these walls, as well as specimens of stool, were done repeatedly, both warm stage and cultural methods. No amebæ nor pubogenic bacteria were ever found. Examinations were repeatedly negative for tubercle bacilli. No barium examination was made.

Two weeks after admission to the hospital the recto-vaginal fistula developed. Three weeks ago, under local anesthesia, the loop ileum was brought out through the abdominal wall and cut across, both ends being left outside, the lower one for irrigation, the other draining the digestive tube. Temperature dropped after this and appetite improved. No other improvement was noted and she steadily lost in strength and died May 10th. The autopsy reveals carcinoma of the rectum. The polypus begins about 18 inches above the tumor, as you will see from the specimen, and besides numerous discrete polypi there was one collection as large as a dime hanging by a pedicle about the size of a lead pencil. Sections of the growth in the rectum shows it to be a carcinoma.

PROGRESS

Abstracts to be submitted to Section Supervisors.

MEDICINE

SUPERVISORS:

F. J. HIRSCHBOECK,
FIDELITY BLDG., DULUTH

THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

OBJECTS AND METHOD OF DIET ADJUSTMENT IN DIABETES—Woodyatt (Arch. Int. Med., Aug., 1921):

A. Nature of the diabetic anomaly and principles of treatment.

1. Specific defect characterizing diabetes is the inability of the body to utilize as much glucose as may be utilized by the normal body when the supply exceeds certain limits. Diabetic is capable of utilizing a limited quantity of glucose.

2. Work of pancreas as an endocrine organ, as far as we know, is solely with the disposition of glucose. Except

for the occurrence of diabetes, the pancreas would not be thought of as an endocrine.

Glucose may act as a stimulant to pancreatic function and a weakened pancreas thus be stimulated to fatigue and decreased function. Lessened glucose allows functional rest and limited recuperation.

3. Occurrence of abnormal quantities of acid bodies appears to be the immediate result of oxidation of certain fatty acid in the absence of a sufficient proportion of "oxidizing" glucose. There is a definite ratio between the quantity of glucose oxidizing in the body and the maximum quantity of ketogenic fatty acid that can be oxidized in the same time without the acetone bodies.

From the molecular weights of glucose and oleic and palmitic acid Shaffer expressed in grams a ratio which would be about 1.5 grams fatty acid to 1 gram glucose. If, in clinical work, this ratio is exceeded, acidosis will develop.

The rationale of treatment, then, is to bring the quantity of glucose entering the metabolism from all sources below the quantity that can be utilized and to adjust in proper relationship the glucose and fatty acid supply so that there will be freedom from ketonuria.

B. Endogenous factors of food supply.

It must be remembered that during starvation heat continues to be produced, and the magnitude of food supply from the body tissues must be appreciated. Amount of fat in the fasting organism materially affects amount of protein burned. Ingestion of fat may spare tissue fat and prevent too great protein loss.

It is possible to maintain the body with a diet containing only 10 per cent more calories than are produced in fasting.

C. Dealing with food supply in terms of carbohydrate protein and fat.

Numerable food combinations may affect the same patient in innumerable ways. In reality protein, carbohydrates and fat as such are not the substances that are finally oxidized to yield energy. Starch and glycose are resolved into glucose. Protein becomes a mixture of amino acids. Fat must be saponified into glycerol and higher fatty acid. In food analyses all listed as carbohydrate is not necessarily utilizable carbohydrate. Fats completely saponified yield approximately 10 parts glycerol and 90 parts higher fatty acids. One hundred (100) grams mixed food protein is capable of introducing into the metabolism approximately 58 grams of glucose.

All foods of the body except a small protein fraction resolve themselves into glucose or higher fatty acids.

100 grams carbohydrate yields 100 grams G + O gm. F. A.; 100 grams protein yields 58 grams G + 46 gm. (?) F. A.; 100 grams fat yields 10 grams G + 90 gm. F. A.

(Approximately) where G = Glucose and F. A. = fatty acid. Relationship may then be expressed as food which is introduced by a given combination as follows:

$$I \quad G = C + 0.58 P + 0.1F$$

$$II \quad F. A. = 0.46 P + 0.9F$$

where

C = Carbohydrate

P = Protein

F = Fat

If the ratio is taken F.A. : G = 1.5 : 1, then when

FA

$$= 1.5$$

G

$$\frac{.46P + 0.9F}{C + .58P + 0.1F} = 1.5$$

$$C + .58P + 0.1F$$

$$F = 2C + .54P, \text{ or for clinical purposes}$$

P

$$F = 2C + \frac{P}{2}$$

D. Estimation of Optimal Diets.

Use then formula No. 1, i. e. $G = C + .58P + 0.1F$ and

P

$$\text{No. 2} \quad F = 2C + \frac{P}{2}$$

Find the tolerance and assign value to G in equation No.

1, i. e., suppose 100 grams then

$$100 \text{ grams} = C + .58P + 0.1F$$

1 gram protein per kilo as a conservative minimum.

P

$$\text{For 50 kilo patient then } P = 50, F = 2C + \frac{P}{2} \text{ or}$$

$$2C + 25$$

Glucose yielded by 50 gms. Protein = 29 (i. e., .58 + 50) hence 100, or assigned value for G, minus 29 = 71 gm. to be distributed between fat and CHO.

$$C + 0.1F = 71$$

$$10C + F = 710$$

$$F = 2C + 25$$

$$2C + 25 = 710 - 10C$$

$$C = 57 \text{ gms.}$$

$$F = 2C + 25$$

$$F = 114 + 25 = 139 \text{ gms.}$$

Diet would then be as follows:

P 50 gms.

F 139 gms.

C 57 gms.

Calories 1680.

T. A. PEPPARD.

ABSTRACTS FROM RECENT MEDICAL AND PUBLIC HEALTH PAPERS

Div. V. D.—U. S. P. H. SERVICE

Unreliability of Serologic Diagnosis of Syphilis During Pregnancy.—Stühmer and Dreyer applied parallel Wassermann and other serologic tests twice a week in their maternity cases, and they thus have a series of 1,000 tests of parturients' serum, with 2,500 control tests of known syphilitic or nonsyphilitic serum. These experiences show that the serum of healthy women may respond positively to the Wassermann test during pregnancy and childbirth. Unreliable findings were obtained in fully 10 per cent. The retroplacental blood is especially liable to respond misleadingly, and also the blood in the umbilical vein. The fewest erroneous responses were obtained with the Sachs-Georgi flocculation test. (A. Stühmer and K. Dreyer, *Zeitschrift für Geburtshilfe und Gynäk.*, Berlin, November 12, 1921; *Journal A. M. A.*, February 25, 1922.)

Enlargement of the Lower Lip from Syphilis.—Montgom-

ery and Culver note that besides the typical leucic papule or small, or large gumma, there occasionally arises, in certain regions, a diffuse syphilitic infiltration. The lower lip is especially subject to this and the deformity produced is so striking as to constitute a valuable diagnostic feature. (Douglass W. Montgomery and George D. Culver, *American Journal of Syphilis*, January, 1922.)

Roentgenology of Syphilis in Bone.—Skinner compares the bone lesions of syphilis with the bone lesions of tuberculosis and classifies the shadow values of bone lesions: 1. Bone lesions cast shadows which are *constructive* in osteomyelitis and syphilis. 2. Bone lesions cast shadows which are *destructive* in tuberculosis and malignancy. 3. Bone tumors which are *constructive* are usually benign: bone tumors in which destructive changes predominate are malignant.

The keynote of leucic bone is osteoplasia. Contrasting conditions, such as tuberculosis and malignancy, produce loss of bone salts or halisteresis. Syphilitic lesions produce sharp and dense shadows while tuberculosis gives poor photographic results on account of the lypomacoea. Author discusses syphilis of the long bones, syphilis of the skull, and syphilis of the joints. The joint lesions of hereditary syphilis do not cast diagnostic shadows. The reaction of bone syphilis to proper therapy is usually rapid. (E. H. Skinner, *American Journal of Syphilis*, January, 1922.)

Sigma Reaction for Syphilis.—Author summarizes as follows:

1. The sigma reaction for syphilis described by Dyer and Ward (*Lancet*, 1921, 1,956) is much simpler in technique than is the Wassermann reaction.

2. The results of the series here reported would seem to show that the results as regards blood serum tests in untreated cases are as good or even slightly better than the results obtained by the Wassermann reaction, when judged from a clinical standpoint.

3. The results obtained in the cerebro-spinal fluid have not been so good as have results of the Wassermann reaction. These cases are however, so few that it is impossible to draw any inference from them.

4. The test is easily standardizable both as regards technique and the reporting of results.

5. Being a quantitative reaction it is possible that important information as to prognosis or the effect of treatment may result in the light of further knowledge. (A. F. Rook, *Lancet*, London, January 21, 1922.)

Syphilography and Dermatology in 1921.—Gougerot comments on the lively discussion still going on as to the comparative merits of large intravenous or small intramuscular or subcutaneous doses of the arsphenamins. All agree on the danger of inadequate treatment. Almost all agree also on the necessity for mercury to consolidate the results obtained with the arsphenamins. The artro-bismuthate of potassium and sodium has been extolled in treatment of syphilis by Levaditi and Sazerac, but no conclusive evidence has been offered as yet, and there is some risk that this drug may induce fever and albuminuria and a stomatitis like that of mercury. Several have reported good results by associating protein therapy with arsphenamin. Some state that the phenomena of the secondary stage disappeared as promptly under parenteral injections of peptone as under arsphenamin treatment.

Schreiner advises an intravenous injection of peptone four hours after the injection of arsphenamin. "Is a rebellious Wassermann reaction due to the habit of secreting antibodies or is it a sign of still persisting infection?" He inclines to the latter view, himself. To ward off toxic action from the arsenicals, sodium hyposulphite is advocated by some; alkalines, etc., by others. (H. Gougerot, *Médecine*, Paris, November, 1921; *Journal A. M. A.* February 4, 1922.)

Abortive Treatment of Syphilis.—This communication states that fifteen patients were given treatment at once or within two weeks after intercourse with a person known to have syphilis. Four injections of neo-arsphenamin were given, increasing from 0.15 to 0.6, with intervals of three, four and five days. Not one has developed any symptoms during the year since, re-examined every three months. (A. Tzank and H. Cambessédés, *Médecine*, Paris, December, 1921; *Journal A. M. A.*, February 11, 1922.)

International Congress on Venereal Diseases (in Prague).—Organized by the League of Red Cross Societies held in Prague, December 5-10. Besides Czechoslovakia, Poland, Yugoslavia, Bulgaria and Greece were represented. Dr. Janovsky, professor, University of Prague, was chairman. The consensus of the members was that sex education should be started very early in the school, and that it can best be given by the teachers, who must, of course, be well posted on the subject. Instruction on venereal disease must be given by physicians and has to come later, before the child leaves school. Self-disinfection was discussed. Notification was realized as a valuable measure, but was not recommended under the present circumstances. (Prague Correspondent, *Journal A. M. A.*, February 4, 1922.)

Prevention of Venereal Diseases.—The Medical Officer of Health for Liverpool reports on the work done during 1920 at the five city clinics during this time. The number of patients on the books was 9,327, the number of these discontinuing treatment before cure was completed was 4,105. This in spite of efforts to get patients back, sending of letters and in the case of women, special visits made by a member of the staff—a woman.

In July, 1916, a beginning was made in the examination of cases of still birth in relation to syphilis. Since then over 1,300 cases have been investigated. During 1920, 411 still-born infants were examined, and of these 43 gave positive evidence of syphilis (i. e., over 10 per cent). (E. W. Hope, *Journal of State Medicine*, November, 1921.)

Survey of the Effect of Venereal Disease Legislation in Western Australia for a Period of Five Years.—"The total number of cases reported during the five years (June 30, 1916 to July 1, 1921) was 5,713 and of these 4,887 occurred amongst males and 826 amongst females, a proportion of approximately six to one. There were 4,355 cases of gonorrhea and 1,055 cases of syphilis, the proportion being approximately four of the former to one of the latter. We find, however that whilst there were five cases of gonorrhea to one of syphilis amongst the males, the ratio was only two to one amongst the females."

"Disregarding congenital syphilis, of the total cases of

this disease recorded 42 per cent are notified as primary, 33 per cent as secondary and 26 per cent as tertiary. The notifications of congenital syphilis are so few in number as to suggest either failure to recognize or failure to notify them."

There has been a steady increase in clinic attendance during the five years: In 1916-17, 361 patients were treated; in 1920-21, 919 patients were treated.

During the five year period only about 500 patients have discontinued treatment and have been lost sight of. (R. C. Everitt Atkinson, *Medical Journal of Australia*, January 21, 1922.)

QUINIDIN THERAPY IN HEART DISEASE. D. C. Wolferth (*The Med. Clin. of No. Amer.*, Nov., 1921) presents the record of a patient with auricular fibrillation, who was treated with quinidin sulphate and discussed the action, therapeutic possibilities, and limitations of the drug.

The record presented was that of a typical case of auricular fibrillation, diagnosis being confirmed by an electrocardiogram. Treatment at first consisted of rest in bed, limited fluid intake and digitalis. The general condition improved, but the fibrillation persisted. The digitalis was then discontinued and quinidin sulphate in increasing doses given, until he received 0.6 gm. t. i. d. Fibrillation ceased and the quinidin was reduced to 0.3 gm. t. i. d. with digitan 0.032 gm. t. i. d. In five days the fibrillation returned. This time three doses of 0.6 gm. quinidin sulphate restored the normal rhythm. He then steadily improved, taking 0.2 gm. quinidin t. i. d. and small doses of digitalis. After 2 months he felt well and was gradually increasing his activities.

He then discusses the discovery of the peculiar effect of quinidin in auricular flutter and fibrillation, referring to the work of Frey, Santesson and Wenckebach. Experimental studies of the effect of quinidin seem to indicate that the action is depressant and exerted on the heart muscle, rather than through the cardiac nerves. There seems to be only slight depression on conduction.

Published reports show that in about half of the cases of auricular flutter and fibrillation a normal rhythm was restored. It seems that quinidin tends in fibrillation to develop auricular flutter and then development of normal rhythm; apparently a reversal of the sequence of events taking place in the development of fibrillation. These effects are then contrasted with those of digitalis.

After discussing the effect of quinidin on conduction (observed clinically), the effect on symptoms, duration of restored normal rhythm, selection of patients for treatment and details of treatment, the writer estimates the value of quinidin in the therapy of heart disease as follows: "At present the proportion of cases in which it can be used with real advantage to the patient, either with or in place of digitalis, is comparatively small, in our experience not over 25 per cent. Digitalis retains its place as the most important drug in the treatment of auricular fibrillation. It has not yet been demonstrated that those cases most successfully treated with quinidin will not eventually have to rely on digitalis.

P. G. BOMAN.

SURGERY

SUPERVISORS:

E. MENDELSSOHN JONES,
LOWRY BLDG., ST. PAUL
VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

TREATMENT OF MULTIPLE PAPILLOMAS OF THE LARYNX—G. B. New (*Ann. of Otolaryngology, Rhinology, and Laryngology*, 1921, XXX, 631): The treatment of multiple papillomas of the larynx in children has always been difficult because of the tendency to recurrence. Many methods have been employed, such as tracheotomy, thyrotomy and cautery, endoscopic operative measures, fulguration, the application of various medicines locally, and x-ray and radium. During the past six years the author has employed radium both inside the larynx and outside the neck, with more satisfactory results than by any other method.

Mackenzie, Clark, and Smith stated that they believe tracheotomy to be the most efficient method of treating papillomas of the larynx. While the value of tracheotomy is well known, cases are reported in which the patients have worn tubes for years without improvement. Polyak advocates the use of radium as a substitute for operative measures. Abbe, in 1898, was the first in this country to treat multiple papillomas of the larynx with radium. Several observers have reported poor results with radium, but on the whole the method seems quite satisfactory. Lynch's suspension apparatus has added a great deal to the efficient care of these patients. His results in removing multiple papillomas by operative measures have been superior to any others on record in this country. He now believes, however, that the best method of treatment is by fulguration or with acid nitrate of mercury.

From the year 1914 to 1920 the author has examined at the Mayo Clinic twenty-six children, between the ages of ten and twelve, who had multiple papillomas of the larynx. Such patients were usually brought to the Clinic because of hoarseness or shortness of breath which began at the age of two or three months as a slight wheezing or crowing cough. Sometimes symptoms do not appear until the child is three or four years old.

Multiple papillomas of the larynx are often diagnosed as laryngismus stridulus, asthma, and enlarged thymus, but these conditions can be ruled out by a careful history. The diagnosis can be made only by laryngoscopic examination.

Many of the patients in this series had been operated on by endoscopic methods. One patient had had six thyrotomies and cauteries, which resulted in a marked scarring of the glottis and the necessity of wearing a tracheotomy tube. One patient had had six suspensions and removal of papillomas, but on examination at the Clinic the larynx was filled with a papillomatous growth. Nineteen of the patients had tracheotomies previously or shortly after their arrival at the Clinic. Tracheotomy was not performed unless obstruction made it necessary.

The treatment in this series of cases was given under ether by means of the Lynch suspension apparatus. Except in a few of the early cases no attempt was made to

remove the papillomas. A small tube containing radium salt or emanation was inserted into the glottis and kept moving under direct observation. From 75 mg. to 150 mg. or milliouries of radium were used for from twenty to thirty-five minutes. No screening was used except the silver tube of the container, which was 1 mm. thick. Treatments were given once in six weeks or two months. Patients must be seen at definite intervals. The most suspensions given in one case were six, and the least, one. In addition to this radium was applied outside the larynx; about 3,000 mg. hours were given, using one inch of wood and 2 mm. of lead screening.

Nine of the twenty-six cases can not be considered in the results, as some patients were not treated at all and others received only one treatment because they could not return at definite intervals.

Of the seventeen patients concerning whom definite information was obtained, eleven are entirely free from papillomas; nine of these had had tracheotomies and the tube had been removed. The tube is always left in place at least six months after the larynx is free from papillomas. One patient suffered a collapse of the trachea above the opening but a two-way tube was inserted for a while and later removed. Two of the eleven patients did not have tracheotomies or treatment by suspension, because of frequent colds, but received external applications of radium. Six of the seventeen patients are still under treatment, five of these during the last year only. Four of the six patients are almost entirely free of papillomas, and the voice is fairly good. Three of these four can cork their tracheotomy tubes. In the entire group the author has not seen any bad results following the use of radium, and he believes this is undoubtedly due to the fact that the radium was under direct observation and was kept moving while in the glottis.

FRENCH K. HANSEL.

CANCER OF THE BREAST—Byron B. Davis (*Arch. of Surg.*, Sept., 1921, pages 348-356): The author reports 190 cases of cancer of the breast, of which he has been able to trace 122. Of this number, seventy-five were free from recurrence for from three to twenty-one years and forty-seven were reported as having died or as suffering from a hopeless recurrence.

No one any longer reports his cancer patients as cured—a three or five year limit is purely arbitrary. The author has had patients remain apparently well for five, eight, and ten years, and then report a recurrence from which they soon died.

The length of time the existence of the lump in the breast has been known and the apparent extent of the disease at the time of operation are not nearly such good indexes of the prognosis as one would theoretically suppose. The discovery of the lump is usually accidental, bearing no definite relationship to the date of the beginning of the disease, or to the extent of its dissemination. Some of the patients with apparently mammary and axillary involvement have been free from recurrence for many years and per contra several patients with only a small lump in the breast, recently discovered, with no apparent extension to the axillary or other glands, have died of early and rapid carcinoma. The author reports two illustrative cases and

states that there are degrees of malignancy of carcinoma of the breast.

Local recurrence should not be considered the sounding of the death knell. Several of the author's patients have been operated upon for a first, second and even third recurrence and are still alive and apparently free from disease up to ten years after the last recurrence.

When one can make a positive pre-operative diagnosis of cancer, it is too late for the best average results. The ideal operation for mammary carcinoma is the one that starts in as an exploratory incision.

The author believes that the most usual pre-cancerous lesions recognizable in the breast are benign tumors and chronic mastitis and urges the removal of all benign breast tumors and the amputation of breasts that are the seat of chronic mastitis.

The most important lymphatic highway leads from the breast to the axillary glands. Invasion of the axillary glands is usually the first point of attack outside the breast and the pectoral fascia. Occasionally the lungs, the liver and other organs are invaded first and, in rare instances, the patient may die without the axillary glands having been involved.

Cancer cells may reach the mediastinum, the lungs or the pleura by growing along the lymphatics that accompany the perforating branches of the internal mammary artery. About 50 per cent of late cancer cases show invasion of the thoracic cavity.

The author had eight cases which later developed cancer in the opposite breast. Invasion of the peritoneal cavity and liver occurs in the course of this disease. Invasion of the liver has been found in 36.6 per cent of the cases.

The author believes that intensive post-operative x-ray therapy increases the prospects of permanent relief.

Occasional cases are encountered in which it is better not to operate. Those mentioned are: (1) Deep involvement of the chest wall; (2) firm fixation of the tissues to the chest wall; (3) fixation of the axillary mass; (4) very extensive skin involvement; (5) enlarged and fixed supra-clavicular glands; (6) secondary growths on the lungs, liver or other viscera; (7) bone metastasis.

The author believes the time is coming when 70 or 80 per cent of patients with carcinoma of the breast may be permanently relieved.

FRED R. SANDERSON.

THE USE OF POTASSIUM NITRATE IN OSTEO-MYELITIS AND OTHER CHRONIC INFECTIONS: J. R. Pennington (*Jour. Med. Rec.*, 1921, Vol. 2023 C, pp. 975-977). The author makes startling remarks about the benefits of this chemical. He briefly refers to the previous use of a double salt of aluminum and potassium nitrate by an engraver in Baltimore, who had osteomyelitis of the scapula. This chemical consists of 97 per cent potassium and 2½ per cent aluminum. The author's chemical contains only potassium nitrate.

It is used in the form of a poultice. From 10 to 60 grains of potassium nitrate is put with one ounce of rolled oats and enough hot water is added to make a poultice-like mass. The mixture is placed ¼ inch thick between a double layer of gauze of the desired size, and this is

applied to the affected part and then is covered with some impermeable dressing to preserve the heat.

This kind of dressing sets up an immediate inflammatory reaction of the tissues from the skin down to and including the bone, as manifested by hyperemia of the skin, gradually forming pustules, by the marked increase of the discharge and by the gradual changes in the bone, including the absorption of sequestra or extrusion of the same. In the course of a few days the initial inflammatory reaction subsides until healing takes place. This form of dressing has no effect on the normal tissues. The dressing is changed as often as it is necessary.

He has observed that this mixture is not antiseptic, but, on the contrary, it is a culture medium. In discussing its beneficial effects he concludes that it acts by a process of osmosis, the skin acting as a dialyzer. The reaction of the already diseased tissues sets up a large flow of lymph, carrying with it organisms.

He reports only one case, age 49, with osteomyelitis of the tibia, discharging sinus and foul odor.

This was cured completely in eight months. He thinks that this method would be preferable to surgical treatment.

P. BLANCO.

SOME PROBLEMS IN CONNECTION WITH THE SURGERY OF THE BILIARY TRACT—A. Murat Willis (*Ann. of Surg.*, 1922, 75, 196): Although great advances have been made in the diagnosis and treatment of diseases of the biliary tract, Dr. Willis believes there are still many questions open to discussion and improvement. He agrees with C. H. Mayo in the desirability of early diagnosis of cholecystitis in order to save the patient the danger of serious complicating disease. He suggests, however, the possibility of the rank and file of surgeons following the leaders in the profession without full consideration of all the problems involved.

The author notes the danger of frequent gall-bladder operations for indefinite upper abdominal discomfort, while attempting to make too early diagnoses. He feels there are many pathologic conditions which unquestionably indicate cholecystectomy; that is, malignancy, hydrops of the gall-bladder, cicatricial closure of cystic duct, strawberry gall-bladder, and so forth. However, in many cases he advises cholecystostomy; that is, in those due to poor general condition with myocardial or renal involvement, in those in which the local condition shows many dense adhesions distorting and preventing satisfactory palpation of the ducts, or in those with pus or thickened contracted walls.

Patients with a low grade cholecystitis, perhaps with sterile calculi and very few demonstrable bacteria in the bile, have only mild discomfort and most surgeons would advise cholecystostomy. In this type of case, however, the poorest results follow drainage. The gall-bladder should be removed without drainage. Experiments on animals have shown that sterile bile in the peritoneal cavity formed very few adhesions, while the addition of either a foreign body, infection, or both, always caused profuse, dense adhesions. Therefore, as the rubber drain is a foreign body and lends a passage for infection from the outside,

cholecystectomy without drainage is preferred in mild, comparatively sterile cases.

Willis suggests the possibility of the old condemned procedure of cholecystotomy as an operation of choice in certain selected cases; that is, in cases of low grade infection or none at all, where the gall-bladder does not show demonstrable pathologic changes and presumably has suffered no alteration in functional ability. Cholecystotomy has a distinct field of usefulness in such cases.

L. H. FOWLER.

RECOGNITION OF THE NASAL GANGLION SYNDROME

R. A. BARLOW

(Southern Minnesota Medical Association, December 5)

The author discusses the clinical manifestations and treatment of sphenopalatine disturbances. Irritation of the sphenopalatine ganglion so closely simulates the repeated paroxysms of sneezing seen in hay-fever that some patients with this condition have been incorrectly diagnosed.

Sphenopalatine disturbances are classified as two types: the neuralgic and the sympathetic. Patients with neuralgic disturbances complain of severe lower half headaches. Patients with sympathetic disturbances have persistent sneezing, lacrimation, and hay-fever-like attacks, which are not dependent on season or climate.

The technic for the treatment of the condition is very simple. The nasal ganglion is first cocaineized by passing an applicator with cotton dipped in 10 per cent cocaine into the nose to the posterior end of the middle turbinate. This is withdrawn and a second applicator, dipped in sterile water, is inserted to the same spot and allowed to remain about one minute. This procedure rules out functional disturbances. If the patient has not had any effect by the second day he is again cocaineized. The second applicator is this time dipped in 50 per cent silver nitrate solution instead of sterile water. This is allowed to remain in position about thirty seconds. This treatment is applied to both sides and is usually followed by severe attacks of sneezing. About the third day the treatment is repeated. As a general rule two treatments are sufficient.

DISCUSSION ON THE PAPER OF R. A. BARLOW

C. L. LARSEN: I wish to congratulate Dr. Barlow on his splendid exposition of a subject that has been very much neglected. I believe this is only the second time that this subject has been presented before any of our local medical societies, and he has had probably more experience with it than anyone else in the Northwest. The subject has been so thoroughly covered that all I can do is to elaborate on some important points.

He has differentiated between the painful syndrome and the sympathetic syndrome. The neuralgic or painful syndrome is the more frequent of the two, but a sharp division between the neuralgic and sympathetic syndrome is almost impossible, because the sympathetic syndrome plays an important part in the pain complexes as manifested either by vasomotor or secretory phenomena. It is also impossible to state why one patient suffers from the painful syndrome, such as he has described, eye ache, ear ache, neck ache or tooth ache, and why another patient has symptoms of the sympathetic variety, such as sneezing, rhinorrhea or

hydrorrhea. These sympathetic cases are more amenable to treatment than the neuralgic type, and applications of cocaine followed by applications of silver nitrate or phenol solution frequently help these cases. In the painful cases you will get a cure by the injections.

In order to make a diagnosis of nasal hydrorrhea we must of necessity exclude all pathologic conditions in the nose. All these symptoms have been called lower half headaches, and Cushing has aptly alluded to them as Sluder's neuralgia. It seems to be an appropriate term. These lower half headaches are caused by two conditions, a lesion of the nasal ganglion itself, and a lesion of the sphenoidal sinus. We have but to remember that cocaine applications to the sphenopalatine foramen will relieve the symptoms caused by a lesion of the ganglion itself, but will not affect a lesion of the sphenoidal sinus unless it acts as a forerunner.

It would be interesting, indeed, to know the relationship, and I believe one exists, between these conditions and asthma. It would also be interesting to know if there is a relationship between nasal hydrorrhea and the endocrine glands. This is a symptom-complex which will be developed in the next few years, and it is to be hoped a great deal of light will be thrown on this very important subject. I feel this condition has been more neglected than abused. Neurologists very frequently overlook the symptoms and the rhinologist is apt to overlook the condition unless he finds actual pathology or pus in the nose.

I wish to thank Dr. Barlow for his thoughtful and helpful suggestions.

Dr. A. W. ADSON, Rochester: The subject of sphenopalatine neuralgia, particularly the pain type of syndrome, is of especial interest to me, since there has been a great deal of discussion recently as to whether or not the condition of a true sphenopalatine neuralgia really exists. Dr. Barlow of the Mayo Clinic has been working on the subject for some time. In the literature being published by Sluder and Cushing, you will note that one takes the affirmative stand while the other doubts the existence of a true sphenopalatine neuralgia, believing that it may be a part of trifacial neuralgia. The subject has been discussed rather extensively, and practically all of the brain surgeons feel convinced that there is a definite syndrome of sphenopalatine neuralgia independent of trifacial neuralgia, which is not relieved by division of the posterior root.

Dr. Barlow has taken a conservative attitude and has done so wisely, because if an attempt is made to explain every pain due to a certain ganglion, we will be mistaken in a large number of cases. There is, however, a definite sphenopalatine neuralgia that is not relieved by operation on the gasserian ganglion, and the stand is well taken by Doctors Barlow and Sluder that some method of treatment should be instituted to relieve these patients.

Three points should be emphasized with regard to the diagnosis, e. g., pain underneath the malar bone, pain in the maxilla or root of the nose, and pain above the eye, with a possible radiation of pain in all. I recall one case in particular in which the cocaine was placed over the sphenopalatine area, after an operation on the posterior root had been performed, and instant relief was experienced. I am convinced that there is a syndrome charac-

teristic of true sphenopalatine neuralgia, and the assistance of men specializing in nose and throat work will be necessary to relieve patients whom we are unable to relieve by radical procedure.

Dr. R. A. BARLOW, Rochester (closing): Dr. Larsen spoke of the difficulty of differentiating the sympathetic syndrome and the painful syndrome. I might add that occasionally these patients start in with the sympathetic type, which eventually merges into the neuralgic, or the two may be combined.

My interest has been stimulated largely by seeing patients who had been operated on for mastoid disease and various other conditions, and yet not relieved of the pain. They had what appeared to be the sphenopalatine syndrome, which was relieved by attacking the ganglion itself. The sphenoid sinus may or may not be involved with it. We occasionally see a hyperplastic sphenoiditis associated with this pain, and whether or not the etiology is coincident is difficult to determine.

As Dr. Adson has remarked, we have assumed a conservative attitude purposely because any one working in this field is apt to become enthusiastic and attribute every headache to the sphenopalatine ganglion and to misconstrue some of the results. This syndrome does exist. We should be on the lookout for it; at the same time it occurs in a realm of pain which may be due to a number of other conditions, and an accurate differential diagnosis must be made before good results can be obtained.

A MEMBER: How many cases have you seen?

Dr. BARLOW: In the routine examination of patients at the clinic sixteen such cases were observed in one year, which leads me to believe that it is not a common condition.

SPECIAL POINTS IN THE TECHNIC OF OPERATIONS ON THE THYROID GLAND

Crile and Lower (Ann. of Surg., Vol. 75, No. 1) bring out many instructive points concerning surgery of the thyroid gland.

(1) The amount of gland to be left should in general be the functional equivalent of a normal gland. This would mean only a small portion of an exophthalmic goitre; but in the case of a large colloid goitre, a bulk larger than that of a normal thyroid is required because the colloid goitre is not as active as the normal gland.

(2) Unless the median lobe was enlarged it was not removed. Occasionally after operation this quiescent lobe increased markedly in size. As a matter of precaution this lobe is now routinely removed.

(3) When more than a vertical incision of the pre-glandular muscles is required a transverse division is done.

(4) Tying the four arteries outside the capsule occasionally results in parathyroid deficiency because of the limitation of their blood supply.

(5) Catching of masses of thyroid tissue by large forceps and then ligating them by needle and catgut "en masse" minimized the number of ligatures and shortened the time of operation, but the pulling together of such a mass of tissue occasionally interfered with the voice.

(6) Turning out the gland with the finger after the gland has been freely exposed necessitates traction, pressure and stretching and mechanical abuse of the recurrent

nerves frequently results. This applies especially in the case of a bilateral deeply burrowing goitre that is wedged tightly in behind the larynx. When the lower pole of a large thyroid extends into the chest and an attempt is made to turn it out with the finger large veins are frequently torn and troublesome bleeding occurs.

(7) Catching and tying bleeding vessels on the surface of the trachea causes irritation, coughing and increased mucus due to interference with the sensory nerves which enter the wall of the trachea. This can be avoided by a sharp, bloodless dissection above the line of cleavage.

(8) With nitrous oxid oxygen apparatus, oxygen under pressure may be at once given in case of tracheal obstruction. The authors have seen a collapsed trachea dilated at will with a change in pressure by means of the gas oxygen apparatus. If tracheotomy is needed a transverse, small opening between the rings with a knife should be made early rather than too late. As soon as the obstruction is removed, the trachea may be closed.

(9) The operative field should be kept clear at all times.

(10) If the trachea be opened the inhalation of blood must be avoided. This is prevented by the control of the local field by hemostats and by skilled assistants.

(11) In serious cases delayed closure of the wound shortens the time of operation. There is practically no postoperative pain or discomfort; thus it lessens the postoperative drive. It also prevents the absorption of wound secretion as the wound is packed with 1-5000 flavine gauze. Aseptic wound secretion has always been known to cause some postoperative increase in temperature in normal non-sensitized individuals, but in the hypersensitized exophthalmic goitre patients, this reaction may be multiplied many times and become a raging destroying fever.

(12) The operation may be stopped at any time if there is any doubt of the outcome. Tie off the ligatures and dress the wound with flavine; the operation can usually be resumed and completed on the following day.

(13) X-ray treatment of the thyroid has the following disadvantages:

- (a) The dose required to produce a given effect is at best a guess.
- (b) Relapses are common.
- (c) The delay in unsuccessful cases leads to serious damage to certain organs,—the myocardium, liver, nervous system, etc.
- (d) In case of operation later, the scar tissue and adhesions caused by the x-ray are a handicap. The dilemma in the use of x-ray is: Myxedema or relapse.

(14) The authors employ ligation only as a preliminary to thyroidectomy. The good effect of ligation, in the authors' opinion, is due mostly to a break in the nerve supply of the thyroid since the principal sympathetic nerves run in the walls of the superior thyroid arteries.

(15) Diagnosis of hyperthyroidism is the indication for thyroidectomy. In view of the comparatively short stay in the hospital, the slight risk, the inconsequential scar, the authors are prepared to accept the dictum "operate on diagnosis."

E. MENDELSSOHN JONES.

TENDON TRANSPLANTATION FOR WRIST DROP

K. SPEED

(Surg. Clinics of Chicago, 1920, Vol. 4, No. 6, pp. 1139-49)

Describes the former operation devised by the author consisting in transplanting of one-half each of the flexor carpi radialis and ulnaris tendons into the base of the second and fifth metacarpal bones respectively. This was a temporary measure to hold the hand in hyperextension while waiting for the time of suturing the musculospiral nerve.

Murphy described in 1915 his operation of using the flexor carpi radialis alone, inserting it into all three extensors of the thumb and into the index and common extensor. But this is not practical because of the large number of tendons attached to one single tendon.

Hyperextension of the wrist is essential in the treatment of wrist drop by tendon transplant.

The operation of choice uses three tendons: The flexor carpi radialis, flexor carpi ulnaris and the supinator. The *flexor carpi ulnaris* is transplanted into the several tendons of the extensor communis digitorum, especially into the extensor indicis and the extensor longus pollicis. The *flexor carpi radialis* is transplanted into the extensor brevis pollicis and the abductor longus pollicis. These transplantations serve to extend hand and fingers and also to abduct and extend the thumb.

The supinator arises in the lateral epicondyle of the humerus and is inserted into inner surface of the radius. It is severed from the radial insertion and inserted into the belly of the common extensor while the hand is in full extension. The pronator radii teres, supplied by the median nerve, may be used when the new supply of the supinator is severed (branch of musculospiral).

He described the technique, which is self-explanatory. Uses one posterior medial incision, and two anterior later incisions to expose the flexor tendons. The belly of the extensor longus digitorum is split lengthways to expose the supinator. The hand and forearm are put on a splint with hand hyperextended and thumb abducted.

P. BLANCO.

GYNECOLOGY AND OBSTETRICS

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RADIUM THERAPY OF HEMORRHAGIC METRITIS EXCLUSIVE OF CANCER AND FIBROID OF THE UTERUS—M. Koenig, Geneva (Gyn. et Obstetrique, Rev. Mens., vol. 4): The author eliminates from his study all uterine bleeding due to cancer, fibroids, the puerperium, ovarian tumors, acute or chronic pelvic inflammation, or constitutional disease. He reviews the development of x-ray and radium therapy and credits Abbe with the original work with salts of radium used in the uterine cavity, in 1905. The biological action is studied in some detail. Abbe explained the effect of the B rays as a com-

plete destruction of the mucosa and a vascular blocking from obliterative end-arteritis. With suitable filtration the obliterative action is carried deeper. The effect on the ovary is not satisfactorily explained. There is much difference of opinion. Gauss and many German workers believe that the amenorrhea results from action on the ovary. Kelly, together with many of the French, holds that there is direct action in the uterine muscles and vessels, a vasomotor paralysis and obliterative end-arteritis. There are also effects through the blood even from short treatment, since it has been well established that repeated and prolonged exposure in radium workers causes destruction of red blood cells, leucocytes, and finally of the blood-forming organs, giving a final picture resembling pernicious anemia. Koenig leaves unexplained his idea of the action in control of uterine bleeding.

Technique: This is rather minutely reviewed from a technical standpoint. The dosage is somewhat empirical, but Koenig believes this should be expressed to show the number of milligrams, the number of hours exposure, and frequency of repetition. He uses from 50 to 100 mg. filtered with brass and rubber, or brass, aluminum, and rubber, for an exposure of 24 hours. The patient is anesthetized, subjected to careful pelvic examination, the cervix is dilated and a diagnostic curettage is done. The tube with radium is placed in the uterine canal and the vagina well protected with gauze packs. In young women the same dose is left in situ for a shorter period, and repeated if necessary.

Indications: The terms menorrhagia and metrorrhagia are symptomatic only. Since no precise explanation for the mechanism of normal menstruation is generally accepted, it is impossible to describe causes for pathological deviations. The conception of endometritis and metritis has had considerable vogue, but is not generally accepted. The term "Metropathia Hemorrhagica" is extensively used but is still undefined. The author accepts as a working classification: 1. That of young virgins, Kelly, Gauss and Friedrick speak enthusiastically of radium in this type, and claim to induce a temporary amenorrhea followed later by normal menstruation. Koenig is fearful and has used it only twice with good results. He would use radium to induce sterility in tuberculous patients without hesitation. 2. Women in the midst of sexual life. In this class of patients radium is reserved for those where ordinary measures as curettage have failed, and hysterectomy is contra-indicated. Radium is prohibited in the presence of recent salpingitis, and is withheld by most operators where there is reason to suspect chronic pelvic inflammation. 3. Women approaching the menopause. Pathological hemorrhage may be due to: repeated child-bearing, previous infection, parenchymatous or vascular sclerosis, constitutional disease or ovarian dys-function. The uterus is slightly enlarged and boggy, the mucosa is usually hypertrophic, and the walls thickened. Curettage and many therapeutic measures have been used with unsatisfactory results. This is the ideal group for radium and this agent is the first choice. If properly used the risk is slight. The discomfort is not more than would be expected from the anesthetic and simple intrauterine treatment. The patients usually leave the hospital on the second or third day. Koenig prefers radium to the x-ray

at present. 1. It is most logical to use the therapeutic agent in the uterus and thus protect other structures. 2. Accurate diagnosis is possible. 3. Radium acts more promptly and the effects on the ovary are less distressing. 4. Radium therapy is more simple and can be used in any locality. 5. A single massive dose will destroy cancer if this be present and overlooked.

Results: Koenig reviews the results published by Gause and Friedrich with from 94 to 98 per cent of cures, Clark with 35 cases and but one failure, together with those of many of the French workers. His own report includes 30 patients, most of whom were between 38 and 46 years and had received other forms of treatment with unsatisfactory results. Complete and immediate amenorrhea was obtained in 12 cases, the same after from one to three periods in 8, after from one to three profuse periods in 2. Normal menstruation was obtained in 3 and scanty periods in 4. One was a failure because a small dose was given in an attempt to preserve normal menstruation. This was subsequently cured by a single massive dose.

The author concludes that within proper limits of use, radium is a rapid and sure hemostatic in uterine hemorrhage not due to cancer, fibroma, neoplasm, or adnexal infection. It is inoffensive in women over 40 where the menopause is not objectionable. In these cases it is the treatment of choice to be used to the exclusion of all other gynecological measures. For younger women in whom the ovarian function is to be preserved, radium is to be used only where other measures have failed, at least till it is possible to exactly graduate the dose. Acute adnexal disease contra-indicates all radium therapy, and chronic pelvic infection prohibits any intra-uterine therapy.

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ROENTGENOLOGY

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ROENTGENOGRAPHIC PLEURAL ANNULAR SHADOWS IN PULMONARY TUBERCULOSIS—J. B. Anderson, Jr. (*Am. Review of T. B.*, Nov., 1921, p. 723):

Quotes Sampson Heise and Brown. (*Am. Rev. T. B.*, 1919, p. 664.) Partial Pneumothorax produced by lung softening and rupture.

Quotes Evans. (*Am. Roentg.*, 1919, VI, 50.) Ulceration or rupture of lung tissue so that air escapes into the area of pleuritis.

Quotes Honeij. (*Arch. Int. Med.*, 1920, XXV, 63.) Annular shadows are the result of adhesions between the parietal and parenchymal surfaces subsequent to inflammation.

Quotes Dunham and Hays. (*Trans. Nat. Tuberc. Assn.*, 1919, p. 324.) Autopsy records in two cases (1) large circular area of thickened, attached pleura overlying a

pyramid of caseation in the lung in which a cavity was found and (2) a cavity was underlying lesion.

Study consists of 50 annular shadows occurring in 36 cases. Tubercle bacilli in all cases. Of the 50 shadows, 19 were circular, 21 ovoid, 10 incomplete or irregular. Usually long diameter lay in horizontal plane of the chest. Rings vary greatly in density. Density within ring greater than surrounding pulmonary field in 17 cases, no great difference in 33, rarefied as compared with other lung markings 0.

In almost all cases lung markings made out beneath center of shadow. Inner border of shadow more sharply defined in 39 cases, borders equal in 11 cases. Outer border more sharply defined in 0.

In 13 cases there was a horizontal line suggesting fluid. (Proven to be fluid in 4 cases.)

Heavy striations, most of which extended to hilum, were considered thickened lymphatic trunks.

Shadows situated, 4 in contact with anterior chest wall between 2nd and 4th rib, 23 situated posteriorly mostly between 3rd and 8th ribs, 23 situated in planes of interlobar fissures. Majority, therefore, situated in planes of the pleura and in upper half of chest.

Changes in size observed.

Shadows occurred in presence of activity. Never seen to appear with retrogressive lesion. Also never became larger with latter condition.

In two cases in which pneumothorax was induced, adhesions were found at site of former ring.

Incidence of annular shadows (11 per cent to 20 per cent of consecutive cases) greater than incidence of spontaneous rupture.

Site of annular shadows does not correspond to the sites of most frequent rupture.

Annular shadows in upper portion of lung. Usually in cases of partial collapse, lower portion is involved. Symptoms of lung rupture lacking.

Roentgen characteristics of partial pneumothorax lacking. Lack of physical signs of pneumothorax. Some annular shadows may be localized pneumothoraces.

It is stated then that simple localized pleurisy is the basis of the annular shadow.

Rate of incidence of annular shadows is compatible with that of localized pleuritis.

Site of annular shadows (posteriorly at level of 7th or 8th vertebral bodies or in interlobar fissure) correspond with site of pleuritic changes.

Development follows pulmonary involvement.

Permanent residuum of annular shadow is a pleural thickening. Hypothesis then advanced, with diagram to show formation of area of pleuritis which advances to any given size with subsequent healing from the central portion and shrinkage, leaving finally only the thickened pleura. Explanation made of fluid level which shifts with change of position.

Experimental reconstruction of a localized pleurisy in vitro.

T. A. PEPPARD.

ROENTGEN RAY INTOXICATION—II: A study of the Sequence of Clinical, Anatomical and Histological Changes Following a Unit Dose of X-rays. S. L. Warren and G. H. Whipple. (Jour. of Exp. Med., Feb., 1922, p. 203.)

This paper follows the progress of pathological changes following the initial exposure to Roentgen rays.

In the first twenty-four hours there is a slight increase in urinary nitrogen, but not to any marked degree until the day before death. This nitrogen output does not in any way follow the very slight clinical manifestations which may appear. While usually there are no apparent symptom manifestations of x-ray reaction within the first twenty-four hours, there are definite histological changes in the epithelium of the crypts of the small intestine, as well as slight changes in the bone-marrow, lymphatic structures and the ovaries.

The appearance of clinical symptoms in the second twenty-four-hour period coincides with the appearance of cell changes within the epithelium of the intestine. The epithelial covering of the crypts is first affected, with necrosis and ecchymoses, but the epithelium of the villi at this time is still intact and in apparently good condition.

In the third twenty-four-hour period, clinical symptoms, diarrhea, emesis and weakness become much more pronounced. These symptoms are accompanied histologically by an inflammatory reaction of the entire small intestine, while the epithelium of the villi disappears, with edema and necrosis, and a gradual progress of intoxication.

The very severe clinical reaction of the fourth day is a rapid onset of severe intoxication, which may be considered as due to absorption of toxic necrotic tissue and possibly secondary infection. While there is no evidence of any stomach involvement, there are some slight changes in the colon. As in the previous paper, the conclusion is drawn that the post-x-ray reaction is due to the primary injury of the epithelium of the small intestine.

This paper contains post-mortem reports of dogs sacrificed, 2, 24, 48, 72, and 96 hours after lethal dose of Roentgen rays over the abdomen and numerous reports of histological studies of tissues obtained at necropsy.

A. U. DESJARDINS.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

CLINICAL TUBERCULOSIS. Frances Marion Pottenger. C. V. Mosby Co. Vols. 1 and 2.

THE MECHANICS OF THE DIGESTIVE TRACT. Walter G. Alvarez. Paul B. Hoeber. \$3.50.

ANNUAL REPORTS. U. S. Public Health Service. 1921.

PUBLIC HEALTH REPORTS. 1916-1917-1918. Reprints Nos. 406-146-498-505-421-410-522-426-394-390-285-231-547-551-439.

ABDOMINAL PAIN. Dr. Norbert Ortner. Rebman Co.

THE PHYSICIAN HIMSELF. D. W. Cathell, M. D. Cloth. Published by author, Emerson Hotel, Baltimore.

THE PLACE OF VERSION IN OBSTETRICS. Irving W. Potter, M. D., F. A. C. S., Buffalo, N. Y. C. V. Mosby Co. \$5.00.

RADIUM THERAPY. Frank Edward Simpson. St. Louis. C. V. Mosby Co. \$7.00.

MANAGEMENT OF THE SICK INFANT. Langley Potter, M. D., St. Louis. C. V. Mosby Co. \$7.50.

OPIATE ADDICTION—ITS HANDLING AND TREATMENT. Edward Huntington Williams, New York. The MacMillan Co. 1922.

THE HEALTHY CHILD FROM TWO TO SEVEN. Francis Hamilton MacCarthy. The MacMillan Co. 1922.

PRACTICAL INFANT FEEDING. Lewis Webb Hill, M. D., Philadelphia. W. B. Saunders Co. \$5.00.

THE THYROID GLAND—Clinics of Geo. W. Crile, M. D., and associates at Cleveland, Ohio. W. B. Saunders Co. Philadelphia. \$5.00.

SURGICAL AND MECHANICAL TREATMENT OF PERIPHERAL NERVES. Byton Stookey, M. D. W. B. Saunders Co. 1922. \$10.00.

NEW AND NON-OFFICIAL REMEDIES. 1922. A. M. A.

1921 COLLECTED PAPERS OF THE MAYO CLINIC, ROCHESTER, MINN. Philadelphia and London. W. B. Saunders Co. 1922. \$12.00.

THE THIRTEENTH AMENDMENT. Charles Taber Stout. New York. Mitchell Kennerly. 1921. \$1.50.

FOUR PAMPHLETS—FEMALE WEAKNESS, 15c; EPILEPSY "CURES" AND TREATMENT, 15c; OBESITY CURES, 15c; THE NOSTRUM AND THE PUBLIC HEALTH, 10c. Propaganda Dept. A. M. A.

THE HEART OF THE ANTI-VIVISECTIONIST. C. S. Bluemel, M. A., M. D., L. R. C. P. (London), M. P. C. S. (Eng.). Denver. Colorado Association for Protection of Public Health.

ANNUAL REPORT. Medical Dept. United Fruit Co. 1921. Boston. W. M. Leonard, Inc.

THE LOGIC OF THE UNCONSCIOUS MIND. By M. K. Bradby. Cloth. Pp. 304. London: University Press.

In this volume the author delves deeply into the realms of the human mind and endeavors to shed light in regions hitherto unexplored. As his introduction he writes upon Formal Logic, analyzing ancient and modern thought. The book proper is divided into three parts.

Part 1 deals with the unconscious background to conscious reasoning. In it he treats instinct and intuition, taking up dreams and unconscious symbolism and language, with some of the relations of language and logic.

Part 2 takes up fallacy, with classification of fallacies and analyses of some cases. Unconscious motives are the source of fallacy.

Part 3 deals with logic as applied to life, touching upon social problems, education, love, religion and spiritualism in their relationship to logic.

He very aptly concludes with a chapter called "Progress."

This work does not appeal to all but appeals to those taking interest in motives underlying human thought and action.

W. H. HENGSTLER, M. D.

INFECTIOUS DISEASES. A Practical Textbook. By Claude Buchanan Ker, M. D., Ed. F. R. C. P., Ed. Medical Superintendent, City Hospital, Edinburgh, and Lec-

turer in Infectious Diseases to the University of Edinburgh; Major, R. A. M. C. T. F. Cloth. Price, \$14. Pp. 627, with 90 illustrations. London: Oxford University Press, 1920, Second Edition.

The author's purpose is to lay before the reader the practical side of the subject of infectious diseases. Bacteriology and pathology have been discussed only in those diseases where they have a clinical application. The great questions of diagnosis, prognosis, and treatment, however, have been gone into in detail. There is little reference to the literature, as the volume is rather a record of personal experience to which has been added material of recognized value from the best sources.

Because of the large amount of work done on infectious diseases since the publication of the first edition, extensive alterations and additions were necessary and several portions have been entirely rewritten.

The author devotes the first thirty pages to a discussion of the many points common to all infectious diseases, their management, and treatment. Then follows a discussion of measles, rubella, scarlet fever, smallpox, typhus, enteric fever, diphtheria, erysipelas, whooping cough, mumps, cerebral-spinal-meningitis, and then he takes twenty pages for the discussion of the problems of "fever hospitals."

A chapter is allotted to each disease, and each is begun with a careful outline, which is rigidly followed. This facilitates immediate reference, not only to a given disease, but to any particular phase of it.

The plates are well chosen, and make possible useful mental pictures of typical conditions. The temperature charts accompanying each chapter show the characteristic temperature variations of that particular disease with relation to prodromal symptoms, the appearance of the eruption, and the development of complications.

HAROLD E. RICHARDSON, M. D.

THE PSYCHOLOGY OF THE SPECIAL SENSES AND THEIR FUNCTIONAL DISORDERS. By Arthur F. Hurst, M. A., M. D. Oxon, F. R. C. P. Physician and Neurologist to Guy's Hospital. Cloth. Pp. 122. London: Oxford University Press. 1920.

A little volume of ten chapters in which the author deals with hysteria and its associated phenomena. His work is

based on observations while in the army, in which he was assisted by a number of associates.

He first discusses hysteria as an entity and then takes up and treats its various phases, including anesthesia, hyperesthesia, pain, deafness, blindness and hyperacusis.

His observations are interesting and unique in some instances and will doubtless prove valuable to those seeking information along this line.

W. H. HENGSTLER, M. D.

INFECTIONS OF THE HAND. By Allen B. Kanavel.

That Dr. Kanavel's "Infections of the Hand" is a masterpiece is well known by every physician. The present revision has given the author the opportunity of supplementing the text with the knowledge of gas bacillus and streptococcus infections gained during the great war, as well as adding a chapter upon the restoration of function in infected hands.

The book begins with the experimental and anatomical studies upon which the deductions are founded, giving the reader a clear understanding of the basis for surgical procedures.

Two chapters include diagnosis and treatment in general which indicate into which group a particular case will fall and will direct the surgeon to the proper section of the book where cases of that nature are discussed more in detail.

The diagnosis and treatment of tenosynovitis is emphasized and dealt with at length, giving also the differential diagnosis.

The relation between the synovial sheath and the fascial spaces is demonstrated by experimental injection of the outlines, boundaries and diverticula of the fascial spaces. This relationship is also brought out by plates of serial cross-sections of the hand at different levels which are very instructive.

This book can well be recommended as an asset to any surgeon's library.

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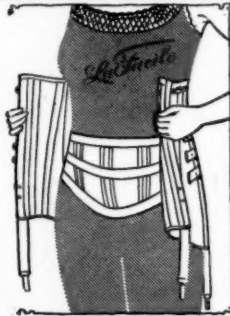
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